Headquarters, U.S.
Marine Corps

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AVIATION TRAINING AND READINESS MANUAL, VOLUME 3, TACTICAL HELICOPTER (SHORT TITLE: T&R MANUAL, VOLUME 3)

DEPARTMENT OF THE NAVY
HEADQUARTERS UNITED STATES MARINE CORPS
WASHINGTON, DC 20380-0001

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Subj: AVIATION TRAINING AND READINESS MANUAL, VOLUME 3, TACTICAL HELICOPTER (SHORT TITLE: T&R MANUAL, VOLUME 3)

Encl: (1) Locator Sheet

1. Purpose. To revise training standards, procedures and policies regarding the training of tactical helicopter aircrews.

2. Cancellation. MCO P3500.16B.

3. Summary of Revision. Each chapter of this revision was substantially changed to incorporate the tenets of the Marine Aviation Campaign Plan. The major changes are as follows:

a. Each pilot chapter contains a unit template describing all like squadrons, core competencies, core and core plus skills, aircrew designations, and required minimum instructor designations and numbers.

b. Simulator events are Combat Readiness Percentage (CRP) weighted.

c. All core skills are contained in the Combat Ready and Combat Qualification Phases of training. Core plus skills, are in the Full-Combat Qualification Phase of training.

4. Reserve Applicability. This Manual is applicable to the Marine Corps Reserve.

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

5. Certification. Reviewed and approved this date.

T. S. JONES
By direction

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ENCLOSURE (1)

RECORD OF CHANGES

Log completed changes action as indicated

Change Number	Date of Change	Date Entered	Signature of Person incorporated Change

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CHAPTER 1 CANCELED BY MCO 3500.48

CHAPTER 2 CANCELED BY MCO P3500.50

CHAPTER 3 CANCELED BY MCO P3500.50

CHAPTER 4

CH-53 PILOT

* * N O T E * *

Aircrews shall include aircrew coordination techniques as part of their brief.

MARINE HEAVY HELICOPTER SQUADRON - CH-53E
UNIT TEMPLATE

NOTE

The capabilties defined and described in the core capability and unit template sections are provided to ensure each like squadron maintains a common base of training and depth of capabilities. When resources permit, and when in the judgement of the commander additional training would significantly increase the unit's warfighting capability, training to a level above these base capabilities is permitted. It is incumbent upon, and expected of, the commander to balance any increase in the depth of core capabilities against the long term health and readiness of his unit while staying within his resource constraints.

1. TABLE OF ORGANIZATION

SQUADRON
16 Aircraft
38 Pilots/26 Crewchiefs

DETACHMENT
4 Aircraft
8 Pilots/4 Crewchiefs

2. SQUADRON CORE CAPABILITY

a. A core capable squadron, i.e., a 16 aircraft squadron, is able to sustain the following minimum performance on a daily basis during sustained contingency/combat operations, assuming at least 100% PAA, 90% in reporting status and 90% T/O on hand in all MOS. If < 90%, core capability will be degraded by a like percentage. The extent to which a core capable squadron is able to surge beyond its core capability is situational dependent. Reserve squadron capability, based on 8 plane PAA, is proportionately less.

b. A core capable squadron should maintain the capability to launch six sections HLL or four sections LLL able to conduct: NVG long range raid/reinforcement (to include aerial refueling), NVG TERF external/internal combat resupply, NVG combined arty raid/air movement from expeditionary and amphibious platforms as appropriate.

c. A core capable detachment should maintain the capability to launch one section LLL or two sections HLL capable of conducting NVG long range raid/reinforcement (to include aerial refueling), NVG TERF external/internal combat resupply, NVG combined arty raid/air movement from expeditionary and amphibious platforms as appropriate.

3. **BASIC AIRCREW QUALIFICATIONS**. As a minimum, in order to be considered core competent, a squadron must possess the following numbers of aircrew who are core competent in each core skill. (Note: If a squadron is < T/O, required numbers are reduced by a like %)

CORE SKILL	SQDN TOTAL (38 PILOTS)	SQDN PILOTS (MINUS 1 DET)	DET PILOTS	SQDN TOTAL	SQDN C/C(A/O) (MINUS 1 DET)	DET C/C(A/O)
FORM	24	16	8	12(12)	8(8)	4(4)
CAL	24	16	8	12(12)	8(8)	4(4)
TERF	24	16	8	12(12)	8(8)	4(4)
EXT	24	16	8	12(12)	8(8)	4(4)
DM	16	8	8	12(12)	8(8)	4(4)
AR	12	8	4	NA	NA	NA
CQ	18	10	8	9(8)	5(4)	4(4)
TAC	16	8	8	12(12)	8(8)	4(4)
AG(CC/AGO)	NA	NA	NA	12(12)	8(8)	4(4)
NSQ HLL	24	16	8	12(12)	8(8)	4(4)
NSQ LLL	16	12	4	8(8)	6(6)	2(2)
*Crew chief surpluses may be used to satisfy AO requirements.						

4. **CORE SKILLS AND SORTIES**

	FORM	CAL	TERF	EXT	DM	AR	CQ	TAC	TOTAL
1ST TOUR	2	6	7	7	1	3	6	4	36
2ND TOUR	1	3	4	4	1	2	6	2	23
T&R CODES * 2ND TOUR	$210 $211*	$220 $221* $222 $223* 320 321*	$230 $231* $232* $233 $234* 330 331*	$240* $241 $242* $340 $341* 342* 343	$350*	$360 $361* $362*	$270* $271* $272* $370* 371* 372*	$280 $281* $380 $381*	
$-Denotes events required for core competency									

5. **SORTIES REQUIRED TO MAINTAIN CORE SKILLS**. For each twelve month period after achieving competency, a pilot would be required to fly the following number of sorties in each skill area to maintain that competency.

FORM	CAL	TERF	EXT	DM	AR	CQ	TAC
2	2	2	3	1	2	1	1

6. **FLIGHT LEADER/INSTRUCTOR QUALIFICATIONS**. As a minimum, in order for a squadron to be considered core competent, it must possess the following numbers of aircrew in the listed flight leadership/instructor categories. (Note: If the squadron is staffed below T/O, required numbers are reduced by a like %)

DESIGNATION	SQDN TOTAL	SQDN PILOTS (minus 1 det)	DET PILOTS	SQDN TOTAL	SQDN C/C(A/O) (minus 1 det)	DET C/C(A/O)
HAC	12	8	4	-	-	-
SEC LDR	9	6	3	-	-	-
DIV LDR	6	4	2	-	-	-
FLT LDR	5	3	2	-	-	-
AMC	4	3	1	-	-	-
ARI	4	3	1	-	-	-
TERFI	6	4	2	5	3	2
DMI	3	2	1	3	2	1
NSI	5	4	1	5	4	1
WTI	2*	2	0*	2*	2	0*
AGI	NA	-	-	4	3	1
* To the maximum extent possible, squadrons should provide a WTI and WTCCI for each detachment						

7. **SORTIES REQUIRED TO QUALIFY FOR DESIGNATION AS FLIGHT LD/IP**

	SEC LDR	DIV LDR	FLT LDR	AMC	FCP	TERFI	DMI	ARI	NSI	WTI
SORTIES	1	1	1	1	1	3	3	2	4	*
T&R CODES	393	394	602	603	604	570, 571, 572	580, 581, 582	520, 521	590, 591,592 ,593	See MAWTS 1 Course Catalog

8. **SORTIES REQUIRED TO QUALIFY FOR DESIGNATION AS CREWCHIEF INSTRUCTOR**

	TERFI	DMI	AGI	NSI	WTI
SORTIES	2	3	4	4	*
T&R CODES	570, 571	580, 581,582	540, 541, 542, 543	590,591, 592,593	SEE MAWTS-1 CATALOGUE

MARINE HEAVY HELICOPTER SQUADRON - CH-53D UNIT TEMPLATE

1. **TABLE OF ORGANIZATION**

SQUADRON
8 Aircraft
20 Pilots/12 Crewchiefs

2. **SQUADRON CORE CAPABILITY**

a. A core capable squadron is able to sustain the following minimum performance on a daily basis during sustained contingency/combat operations, assuming at least 100% PAA, 90% in reporting status and 90% T/O on hand in all MOS. If < 90%, core capability will be degraded by a like percentage. The extent to which a core capable squadron is able to surge beyond its core capability is situational dependent.

b. A core capable squadron is able to sortie two sections HLL or one section LLL able to conduct: long range raid/rein, external/internal combat resupply, air movement from expeditionary and amphibious platforms.

3. **BASIC AIRCREW QUALIFICATIONS**. As a minimum, in order to be considered core competent, a squadron must possess the following numbers of aircrew who are core competent in each core skill. (Note: If a squadron is staffed below T/O, required numbers are reduced by a like %)

CORE SKILL	SQDN PILOTS	SQDN C/C(A/O)
FORM	8	4(4)
CAL	8	4(4)
TERF	8	4(4)
EXT	8	4(4)
DM	4	4(4)
CQ	4	4(4)
TAC	4	4(4)
NSQ HLL	8	4(4)
NSQ LLL	4	2(2)
Crew chief surpluses may be used to satisfy AO requirements.		

4. **CORE SKILLS AND SORTIES**

	FORM	CAL	TERF	EXT
1ST TOUR	2	6	7	7
2ND TOUR	1	3	4	4
T&R CODES * 2ND TOUR	$210, $211*	$220, $221*, $222, $223*, 320, 321*	$230, $231*, $232*, $233, $234*, 330, 331*	$240*, $241, $242*, $340, $341*, 342*, 343

	DM	CQ	TAC	TOTAL
1ST TOUR	1	6	4	33
2ND TOUR	1	6	2	21
T&R CODES * 2ND TOUR	$350*	$270*, $271*, $272*, $370*, 371*, 372*	$280, $381*, $380, $381*	
$-Denotes sorties required for core competency				

5. **SORTIES REQUIRED TO MAINTAIN CORE SKILLS**. For each twelve month period after achieving competency, a pilot would be required to fly the following number of sorties in each skill area to maintain that competency.

FORM	CAL	TERF	EXT	DM	CQ	TAC
2	2	2	3	1	1	1

6. **FLIGHT LEADER/INSTRUCTOR QUALIFICATIONS**. As a minimum, in order for a squadron to be considered Core Competent, it must possess the following numbers of aircrew in the listed flight leadership/instructor categories. (Note: If the squadron is staffed below T/O, required numbers are reduced by a like %)

DESIGNATION	SQDN PILOTS	SQDN C/C(A/O)
HAC	4	-
SEC LDR	3	-
DIV LDR	2	-
FLT LDR	2	-
AMC	2	-
TERFI	4	3
DMI	2	1
NSI	3	3
WTI	1	1
AGI	-	1

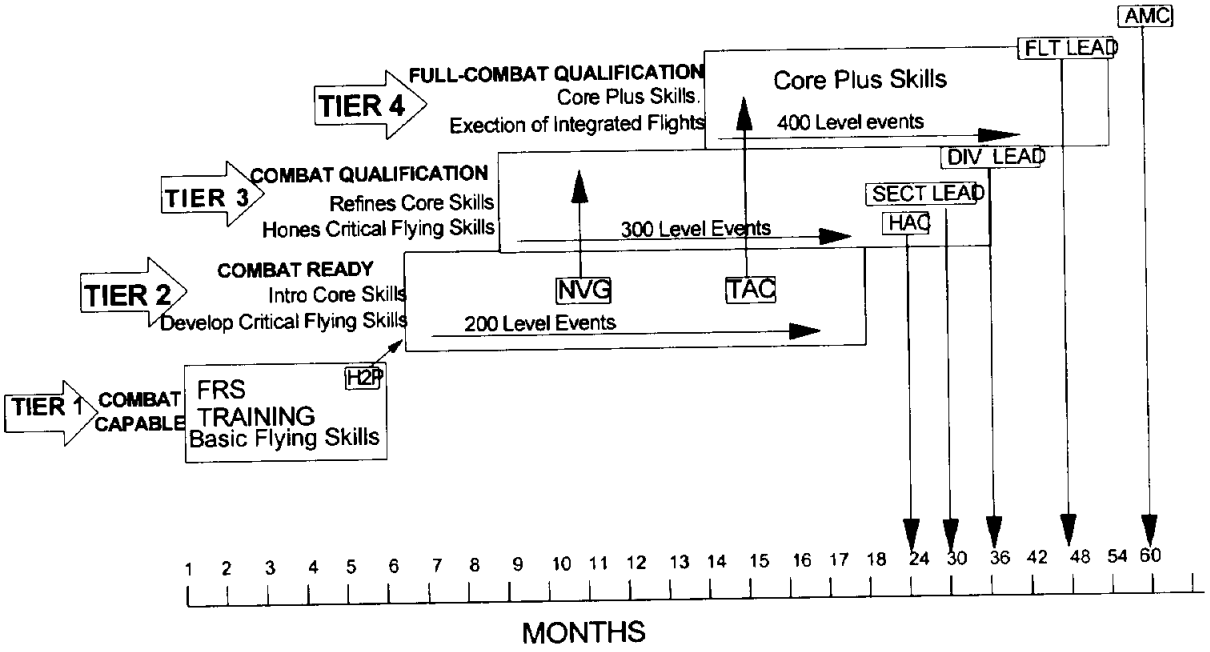
7. **SORTIES REQUIRED TO QUALIFY FOR DESIGNATION AS FLIGHT LD/IP**

	SEC LDR	DIV LDR	FLT LDR	AMC	FCP
SORTIES	1	1	1	1	1
T&R CODES	393	394	602	603	604

	TERPI	DMI	ARI	NSI	WTI
SORTIES	3	3	N/A	4	*
T&R CODES	570, 571, 572	580, 581, 582	N/A	590, 591, 592, 593	SEE MAWTS-1 CATALOGUE

8. **SORTIES REQUIRED TO QUALIFY FOR DESIGNATION AS CREWCHIEF INSTRUCTOR**

	TERPI	DMI	AGI	NSI	WTI
SORTIES	2	3	4	4	*
T&R CODES	570,571	580,581,582	540,541,542, 543	590,591, 592,593	SEE MAWTS-1 CATALOGUE



CH-53 NOTIONAL TRAINING MODEL

Figure 4-1.--CH-53 Pilot Notional Training Progression Model

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400. PROGRAM OF INSTRUCTION (P0I) FOR BASIC PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1-2	CH-53D or CH-53E Familiarization	Training Squadron
3-24	Combat Capable Phase	Training Squadron
25-60	Combat Ready Phase	Tactical Squadron
61-96	Combat Qualification Phase	Tactical Squadron
96+	Full-Combat Qualification Phase	Tactical Squadron

401. P0I FOR TRANSITION PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1-2	CH-53E Familiarization	Training Squadron
3-24	Combat Capable Phase	Training Squadron
25-60	Combat Ready Phase	Tactical Squadron
61-96	Combat Qualification Phase	Tactical Squadron
96+	Full-Combat Qualification Phase	Tactical Squadron

402. P0I FOR CONVERSION PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1-2	CH-53E Familiarization	Training Squadron
3-12	Combat Capable Phase	Training Squadron
13-24	Combat Ready Phase	Tactical Squadron
25-36	Combat Qualification Phase	Tactical Squadron
37+	Full-Combat Qualification Phase	Tactical Squadron

403. P0I FOR CH-53 SERIES CONVERSION PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1-2	CH-53D or CH-53E Familiarization	Trng/Tact Squadron
3-l1	Combat Capable Phase	Training Squadron
12-14	Combat Ready Phase	Tactical Squadron
15-17	Combat Qualification Phase	Tactical Squadron
17+	Full-Combat Qualification Phase	Tactical Squadron

404. P0I FOR REFRESHER PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1-2	CH-53D or CH-53E Familiarization	Training Squadron
3-9	Combat Capable Phase	Trng/Tact Squadron
10-17	Combat Ready Phase	Trng/Tact Squadron
18-25	Combat Qualification Phase	Trng/Tact Squadron
25+	Full-Combat Qualification Phase	Trng/Tact Squadron

405. P0I FOR MODIFIED REFRESHER PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1-2	CH-53D or CH-53E Familiarization	Training Squadron
3-6	Combat Capable Phase	Training Squadron

406. P0I FOR INSTRUCTOR PILOT

WEEKS	COURSE/PHASE	ACTIVITY
1-4	Flight Instructor	Training Squadron

410. GROUND TRAINING COURSES OF INSTRUCTION

COURSE	ACTIVITY
CH-53E Familiarization	Training Squadron
SERE School	Joint Training Course
Instrument School	Trng/Tact Squadron
Combined Service Support	Trng/Tact Squadron
Nuclear Loading School	Tactical Squadron

411. AIRCREW TRAINING REFERENCES. The following references shall be used to ensure safe and standardized training procedures, grading criteria, and aircraft operation:

OPNAVINST 3710.7	NATOPS General Flight and Operations
NAVAIR 00-80T-106	LHA,LPH,LHD NATOPS Manual
NWP-42	Shipboard Helicopter Operations Manual
NAVAIR 01-230-HMA-1	CH-53A/D NATOPS Flight Manual
NAVAIR A1-H53BE-NFM-000	CH-53E NATOPS Flight Manual
NAVAIR 00-80T-112	NATOPS Instrument Flight Manual
NWP 3-22.5-CH53	CH-53 Tactical Manual
MCO P3500.14_	T&R Manual, Volume 1
MCO 3501.4	Marine Corps Combat Readiness and Evaluation System
	MAWTS-1 Course Catalog

412. SQUADRON LEVEL TRAINING

NATOPS Manual	TRAP
Tac Manual	Light Level Calendar/Shadow Determination
Instrument Procedures	Night Vision Systems
Safety	Night Vision Techniques
MAGTF Organization/Equipment	Terrain Flight Introduction
MAGTF: The Amphibious Assault	Tactical Briefing/Debriefing
Shipboard Qualification	AN/ALE-39 Programming (S)
Intelligence	APR-39 Trainer (15E36) (2)
Weapons Qualification	Helo ESM/ECM Equipment (S)

Survival

LTN-211 OMEGA

Aerial Delivery

Artillery Raid Planning

Assault Support Mission Planning

External Cargo Operations

Forward Arming and Refueling Point

Helo Insertion/Extraction Techniques

NBC Threat (S)

Rope Suspension Training

Search and Rescue

Tactical Briefing/Debriefing

AN/ARN 151 Global Positioning System

AN/AAQ 16B FLIR

Nite Lab Forward Looking Infra-Red Training Program

Helicopter Defensive Measures

Energy Maneuverability

Recognition Training

Soviet model IADS (S)

Countering the RW Threat (S)

Countering the FW Threat

Countering Surface-to-Air Threats (S)

Basic Radar Principles

MACCS Part 1&2

Tactical Formation Maneuvering

Fire Support Coordination Measures

Helicopter Escort Tactics l&2

Tactical Aircrew Coordination Considerations

MAWTS-1 Academic Support Package

420. FLIGHT TRAINING FOR BASIC PILOT

1. Combat Capable Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS	ACFT/SIM PERCENT
Basic Qualification	-	-.-	25.0/0.0
Familiarization	14/8	21.0/8.5	14.0/1.6
Instruments	4/5	6.0/5.0	3.0/1.0
Navigation	2/0	4.0/0.0	2.0/0.0
Formation	2/1	3.0/1.0	2.0/0.2
Confined Area Landings	3/1	5.0/1.0	3.0/0.2
External Loads	4/0	5.0/0.0	4.0/0.0
Terrain Flight	2/0	3.0/0.0	2.0/0.0
Review	1/0	1.5/0.0	1.0/0.0
Combat Capable Pilot Check	1/0	2.0/0.0	1.0/0.0
TOTAL FOR PHASE	33/15	50.5/15.5	57.0/3.0
COMBINED TOTALS	48	66.0	60.0
ACCUMULATION FOR BASIC P0I	48	66.0	60.0

2. Combat Ready Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS	ACFT/SIM PERCENT
Familiarization/Instruments	1/1	1.5/1.5	0.3/0.2
Formation	2/0	3.5/0.0	0.8/0.5
Confined Area Landings	4/0	6.5/0.0	2.3/0.0
Terrain Flight	5/0	8.5/0.0	3.3/0.0
External Loads	3/0	4.5/0.0	2.5/0.0
Defensive Measures	0/1	0.0/1.5	0.0/0.2
Aerial Refueling (CH-53E)	0/1	0.0/1.0	0.0/0.2
Field Carrier Landing Practice	3/1	3.0/1.0	2.5/0.2
Tactics	2/0	4.0/0.0	2.0/0.0
TOTAL FOR PHASE	20/4	31.5/5.0	13.7/1.3
COMBINED TOTALS	24	36.5	15.0
ACCUMULATION FOR BASIC P0I	72	102.5	75.0

3. Combat Qualification Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS	53E/53D/SIM PERCENT
Confined Area Landings	2/0	3.5/0.0	2.5/3.0/0.0
Terrain Flight	2/0	3.5/0.0	2.5/3.0/0.0
Externals Loads	4/0	6.5/0.0	5.0/6.0/0.0
Defensive Measures	1/0	2.0/0.0	1.0/1.5/0.0
Aerial Refueling (CH-53E)	3/0	4.5/0.0	3.5/0.0/0.0
Carrier Qualification	3/0	4.5/0.0	3.0/2.5/0.0
Tactics	2/0	4.0/0.0	2.5/4.0/0.0
Flight Leadership	5/0	7.5/0.0	0.0/0.0/0.0
TOTAL FOR PHASE	22/0	36.0/0.0	20.0/20.0/0.0
COMBINED TOTALS	22	36.0	20.0
ACCUMULATION FOR BASIC P0I	94	138.5	95.0

4. Full-Combat Qualification Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS	ACFT/SIM PERCENT
Helicopter Insertion & Extraction	3/0	4.5/0.0	0.9/0.0
Defensive Measures	2/0	2.0/0.0	1.0/0.0
Nuclear, Biological Chemical	1/0	1.0/0.0	0.3/0.0
Tactics	4/0	10.0/0.0	2.8/0.0
TOTAL FOR PHASE	10/0	17.5/0.0	5.0/0.0
COMBINED TOTALS	10	17.5	5.0
TOTALS FOR BASIC PILOT	104	156.0	100.0

421. FLIGHT TRAINING FOR TRANSITION PILOT

1. Combat Capable Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	14/8	21.0/8.5
Instruments	4/5	6.0/5.0
Navigation	1/0	2.0/0.0
Formation	2/1	3.0/1.0
Confined Area Landings	3/1	5.0/1.0
External Loads	4/0	5.0/0.0
Terrain Flight	2/0	3.0/0.0
Review	1/0	1.5/0.0
Combat Capable Pilot Check	1/0	2.0/0.0
TOTAL FOR PHASE	32/15	48.5/15.5
COMBINED TOTAL	47	64.0
ACCUMULATION FOR TRANSITION P0I	47	64.0

2. Combat Ready Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization/Instruments	1/1	1.5/1.5
Format ion	2/0	3.5/0.0
Confined Area Landings	4/0	6.5/0.0
Terrain Flight	5/0	8.5/0.0
External Loads	3/0	4.5/0.0
Defensive Measures	0/1	0.0/1.5
Aerial Refueling	0/1	0.0/1.0
Field Carrier Landing Practice	3/1	3.0/1.0
Tactics	2/0	4.0/0.0
TOTAL FOR PHASE	20/4	31.5/5.0
COMBINED TOTAL	24	36.5
ACCUMULATION FOR TRANSITION P0I	71	100.5

3. Combat Qualification Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Confined Area Landings	2/0	3.5/0.0
Terrain Flight	2/0	3.5/0.0
Externals Loads	4/0	6.5/0.0
Defensive Measures	1/0	2.0/0.0
Aerial Refueling	3/0	4.5/0.0
Carrier Qualifications	3/0	4.5/0.0
Tactics	2/0	4.0/0.0
Flight Leadership	5/0	7.5/0.0
TOTAL FOR PRASE	22/0	36.0/0.0
COMBINED TOTAL	22	36.0
ACCUMULATION FOR TRANSITION P0I	93	136.5

4. Full-Combat Qualification Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Helicopter Insertion & Extraction	3/0	4.5/0.0
Defensive Measures	2/0	2.0/0.0
Nuclear Biological Chemical	1/0	1.0/0.0
Tactics	4/0	10.0/0.0
TOTAL FOR PEASE	10/0	17.5/0.0
COMBINED TOTAL	10	17.5
TOTAL FOR TRANSITION P0I	103	154.0

422. FLIGHT TRAINING FOR CONVERSION PILOT

1. Combat Capable Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	9/5	13.5/5.5
Instruments	3/5	4.5/5.0
Formation	1/1	1.5/1.0
Confined Area Landings	1/0	1.5/0.0
External Loads	4/0	5.0/0.0
Terrain Flight	1/0	1.5/0.0
Review	1/0	1.5/0.0
Combat Capable Pilot Check	1/0	2.0/0.0
TOTAL FOR PEASE	21/11	31.0/11.5
COMBINED TOTAL	32	42.5
ACCUMULATION FOR CONVERSION P0I	32	42.5

2. Combat Ready Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization/Instruments	0/1	0.0/1.5
Formation	2/0	3.5/0.0
Confined Area Landings	4/0	6.5/0.0
Terrain Flight	4/0	7.0/0.0
External Loads	3/0	4.5/0.0
Defensive Measures	0/1	0.0/1.5
Aerial Refueling	0/1	0.0/1.0
Field Carrier Landing Practice	3/0	3.0/1.0
TOTAL FOR PHASE	16/4	24.5/5.0
COMBINED TOTAL	20	29.5
ACCUMULATION FOR CONVERSION P0I	52	72.0

3. Combat Qualification Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Confined Area Landings	2/0	3.5/0.0
Terrain Flight	2/0	3.5/0.0
Externals Loads	3/0	5.0/0.0
Defensive Measures	1/0	2.0/0.0
Aerial Refueling (CH-53E)	3/0	4.5/0.0
Carrier Qualifications	3/0	4.5/0.0
Flight Leadership	5/0	7.5/0.0
TOTAL FOR PHASE	19/0	30.5/0.0
COMBINED TOTAL	19	30.5
ACCUMULATION FOR CONVERSION P0I	71	102.5

4. Full-Combat Qualification Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Helicopter Insertion & Extraction	3/0	4.5/0.0
Defensive Measures	2/0	2.0/0.0
Nuclear, Biological Chemical	1/0	1.0/0.0
Tactics	2/0	6.0/0.0
TOTAL FOR PHASE	8/0	13.5/0.0
COMBINED TOTALS	8	13.5
ACCUMULATION FOR CONVERSION P0I	79	116.0

423. FLIGHT TRAINING FOR CH-53 PILOT SERIES CONVERSION

1. Combat Capable Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	6/5	9.0/5.5
Instruments	2/5	3.0/5.0
Formation	1/1	1.5/1.0
Confined Area Landings	1/o	1.5/0.0
External Loads	4/0	5.0/0.0
Terrain Flight	1/0	1.5/0.0
Review	1/0	1.5/0.0
Combat Capable Pilot Check	1/0	2.0/0.0
TOTAL FOR PHASE	17/11	25.0/11.5
COMBINED TOTAL	28	36.5
ACCUMULATION FOR SERIES CONVERSION	28	36.5

2. Combat Ready Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Confined Area Landings	1/0	1.5/0.0
Terrain Flight	2/0	3.5/0.0
External Loads	2/0	3.0/0.0
Aerial Refueling	0/1	0.0/1.0
Field Carrier Landing Practice	3/0	3.0/1.0
TOTAL FOR PHASE	8/2	11.0/2.0
COMBINED TOTAL	10	13.0
ACCUMULATION FOR SERIES CONVERSION	38	49.5

3. Combat Qualification Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Terrain Flight	1/0	2.0/0.0
Externals Loads	1/0	1.5/0.0
Aerial Refueling	3/0	4.5/0.0
Carrier Qualifications	3/0	4.5/0.0
Flight Leadership	3/0	4.5/0.0
TOTAL FOR PHASE	11/0	17.0/0.0
COMBINED TOTALS	11	17.0
ACCUMULATION FOR SERIES CONVERSION	49	66.5

4. Full-Combat Qualification Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Helicopter Insertion & Extraction	3/0	4.5/0.0
Defensive Measures	2/0	2.0/0.0
Nuclear, Biological Chemical	1/0	1.0/0.0
Tactics	2/0	6.0/0.0
TOTAL FOR PHASE	8/0	13.5/0.0
COMBINED TOTAL	8	13.5
TOTAL FOR CH-53 SERIES CONVERSION	57	80.0

424. FLIGHT TRAINING FOR REFRESHER PILOT

1. Combat Capable Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	5/5	7.5/5.5
Instruments	2/5	3.0/5.0
Formation	1/1	1.5/1.0
Confined Area Landings	1/0	1.5/0.0
External Loads	2/0	3.0/0.0
Terrain Flight	1/0	1.5/0.0
Review	1/0	1.5/0.0
Combat Capable Pilot Check	1/0	2.0/0.0
TOTAL FOR PHASE	14/11	21.5/11.5
COMBINED TOTAL	25	33.0
ACCUMULATION FOR REFRESHER P0I	25	33.0

2. Combat Ready Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Confined Area Landings	2/0	3.5/0.0
Terrain Flight	3/0	5.0/0.0
External Loads	2/0	3.0/0.0
Defensive Measures	0/1	0.0/1.5
Aerial Refueling (CH-53E)	0/1	0.0/1.0
TOTAL for phase	7/2	11.5/2.5
COMBINED TOTAL	9	14.0
ACCUMULATION FOR REFRESHER P0I	34	47.0

3. Combat Qualification Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Confined Area Landings	1/0	2.0/0.0
Terrain Flight	1/0	2.0/0.0
Externals Loads	1/0	1.5/0.0
Defensive Measures	1/0	2.0/0.0
Aerial Refueling (CH-53E)	2/0	3.0/0.0
Carrier Qualification	1/0	1.5/0.0
TOTAL FOR PHASE	7/0	12.0/0.0
COMBINED TOTAL	7	12.0
ACCUMULATION FOR REFRESHER P0I	41	59.0

4. Full-Combat Qualification Phase

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Helicopter Insertion & Extraction	3/0	4.5/0.0
Defensive Measures	2/0	2.0/0.0
Nuclear, Biological Chemical	1/0	1.0/0.0
Tactics	2/0	6.0/0.0
TOTAL FOR PHASE	8/0	13.5/0.0
COMBINED TOTAL	8	13.5
TOTAL FOR REFRESHER PILOT	49	62.5

425. FLIGHT TRAINING FOR MODIFIED REFRESHER PILOT

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	3	4.5
Instruments	1	1.5
Formation	1	1.5
Confined Area Landings	1	1.5
External Loads	1	1.5
Combat Capable Pilot Check	1	2.0
TOTAL	8	12.5

426. INSTRUCTOR TRAINING

1. Day and Night Unaided Instructor Training (FRS only)

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Familiarization	2	3.0
Instrument	1	2.0
Confined Area Landings	1	1.5
Formation	1	1.5
Externals	1	1.5
Standardization Check	1	1.5
TOTAL	7	11.0

2. Aerial Refueling Instructor

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Aerial Refueling	2	2.0
TOTAL	2	2.0

427. REQUIREMENTS, QUALIFICATIONS AND DESIGNATIONS

STAGE	ACFT/SIM FLIGHTS	ACFT/SIM HOURS
Annual NATOPS Evaluation	1	1.5
Annual Instrument Evaluation	1	1.5
Flight Leader Check	1	1.5
Mission Commander Check	1	1.5
Functional Check Pilot Evaluation	1	2.0
TOTAL	5	8.0
TOTAL FOR INSTRUCTOR AND SPECIAL FLIGHT	14	21.0

430. EVENT TRAINING

1. The aircraft is used for those events designated with an "A" and the flight simulator is used for those events designated with an "S". To give commanding officers the maximum amount of flexibility for training some events allow for the optional use of simulators or aircraft. Those events will use "A/S" for aircraft perferred, simulator optional and "S/A" for simulator perferred, aircraft optional.

2. The visual system must be incorporated with the simulator for completion of a syllabus event (except for instrument flights which can be flown without the visual system)

440. FLIGHT/SIMULATOR PERFORMANCE REQUIREMENTS

1. Purpose. Become familiar with aircraft limitations, operating procedures1 and emergency procedures; demonstrate knowledge of NATOPS, local course rules, and safety regulations pertinent to flight operations.

2. General

a. This manual is written to allow for local conditions and yet remain unclassified. CMC (A) and CG MCCDC encourage squadrons to use the full range of tactics in the tactical manuals and adopt the latest developed and proven tactics.

b. This manual designs the combat capable training phase for an instructor and trainee to maximize training and to minimize syllabus support hours.

c. All flights shall terminate with a comprehensive debrief with emphasis on the aircrew’s performance using all evaluation techniques.

d. Pilots shall fly events annotated with an "N" at least 30 minutes after official sunset. Pilots may fly events annotated with (N) at night.

e. Pilots shall fly events annotated with an "NS" with night vision goggles for the entire flight. Pilots may fly events annotated with "(NS)" with the option of using NVGs.

f. Pilots should fly all simulator "S" training codes prior to the appropriate flight in the aircraft in stage.

3. Syllabus Assignment

a. Basic pilots will be assigned to fly the entire syllabus. Transition, conversion, and refresher pilots will fly those flights designated by a "T, "C," or "R," in the flight description. Series conversion pilots (CH-53D to CH-53E/CH-53E to CH-53D) will fly those flights designated by an "H" in the event description. The squadron training officer shall ensure all Aircrew Training Forms (ATF’s) are entered in section 3 of the Aircrew Performance Record (APR) for all initial qualification events designated by "T," "C," "R," in the event description. These ATFs will replace ATF’s previously entered in section 3. Figure 4-1 shows refly interval and combat readiness percentage. Partial conversion and partial refresher syllabi will be prescribed by the Fleet Replacement Squadron (FRS)

b. Refresher Syllabus. The refresher syllabus is predicated an the experience of the refresher pilot. A pilot in the refresher syllabus should fly all "R" coded events. However, a refresher pilot need not fly every event within a stage of training to be requalified in that stage. The commanding officer may tailor the refresher syllabus to fit the experience of the refresher pilot per MCO P3500.14F. When the "R" coded events within a stage of training are complete, the pilot may be credited with the CRP from the entire stage of training. This assumes the refresher pilot has previous proficiency in a stage of training. If the refresher pilot has no previous proficiency in a stage or particular event, then the refresher should fly the entire stage or all events not previously flown.

(1) A modified refresher syllabus for personnel out of the cockpit for 16-24 months can be individually tailored as specified by the FRS Commanding Officer, however, in no case will this syllabus be less than the minimum modified refresher syllabus shown here. Following the FRS, the refresher's syllabus will be established by the tactical squadron. It will be based upon the refresher syllabus but may be modified by the squadron commanding officer.

(2) The refresher syllabi applies only up to the stage achieved during the prior tour, after that the pilot will complete the entire remaining syllabus.

4. Prior Qualification. Previously qualified and uncurrent CH-53 pilots will fly the Refresher Pilot Program of Instruction. The Fleet Replacement Squadron (FRS) will prescribe partial conversion and partial refresher syllabi.

5. Crew Position Designator. Basic, refresher, and conversion pilots will be in the left seat through combat capable training.

6. Aircrew Evaluation Flights. All pilots shall have an evaluation form filled out upon completion of the following:

a. NATOPS Check (CCX-191, FL-392 and RQD-600). A designated NATOPS instructor/assistant shall evaluate these flights.

b. Instrument Check (RQD-601). A designated instrument instructor shall evaluate RQD-601 annually.

c. Any initial event completed by a basic, conversion, transition, or refresher pilot or recommended by the Squadron Standardization Board. An aircraft commander who is proficient in that event shall evaluate it and write an ATF.

d. If the commanding officer has waived a syllabus event, the squadron training officer shall place a waiver letter in section 3 of the APR.

7. Aircrew Coordination. Aircrews shall brief techniques of aircrew coordination for all flights and/or events.

441. COMBAT CAPABLE PHASE

1. Familiarization (FAM)

a. Purpose. Develop preliminary flight skills in the CH-53 and become familiar with aircraft flight characteristics, limitations, and emergency procedures; to develop proficiency in all maneuvers contained in the familiarization stage, and to develop proficiency to conduct safe operations during day and night.

b. General

(1) Prior to FAM-110, view audio visual presentation, "Pilot's preflight" and conduct a thorough preflight and post flight inspection and a cockpit familiarization to include a blindfold cockpit check. FAM-110 through FAM-115 will normally be completed prior to flying a higher stage events. Discuss and become thoroughly familiar with all aspects of aircrew coordination applicable to familiarization stage maneuvers as described in the appropriate NATOPS Flight Manual and FRS Standardization Manual.

(2) Pilots shall conduct all Night Systems (NS) flights under High Light Level (HLL) ambient conditions with a Night Systems FAM Instructor (NSFI) or Night Systems Instructor (NSI)

c. Crew Requirement. IP/RAC/CC. AO required for FAM-122 and FAM-123.

d. Ground Training. Pilots should complete the appropriate simulator training prior to beginning the combat capable training flight.

e. Simulator Training. (8 Events, 8.5 Hours).

f. Flight Training. (14 Flights, 21.0 Hours).

SFAM-100 1.0 T,C,R,H S

Goal. Introduce normal cockpit procedures, start procedures, and shutdown procedures.

Requirement. Discuss and introduce aircraft shutdown, pre-start checklist, post APP start checklist, starting engines/rotors checklist, pre-taxi checklist, cargo ramp and door procedures checklist, operation of engine trim switches, cruise checklist, fuel transfer checklist, monitoring of instruments (fuel gauges), operation of the ICS, operation of the UHF/AM commset, fuel management, pre-landing checklist, and shutdown checklist.

SFAM-101 1.0 T,C,H S

Goal. Introduce aircraft emergencies, normal ground and flight procedures. Review start/shutdown procedures.

Requirement. Perform and discuss aircrew brief, external fuel tank jettison, cargo ramp/door operation, normal takeoffs to a hover, transition to forward flight, normal approaches to a hover and normal vertical landing. Discuss and respond to an engine compartment fire on the ground, single and/or dual engine compartment fires in-flight, simultaneous engine compartment fires in-flight, APP or cabin heater fire, fuselage fire, and fuel dump.

SFAM-102 1.0 T, R S

Goal. Introduce engine malfunctions. Practice cockpit and flight procedures. Review start/shutdown checklist and all previously introduced emergencies.

Requirement. Perform and discuss blade/pylon fold system switchology, NATOPS brief/NATOPS debrief, maximum performance take-off, straight-in approach, engine restarts during flight, and crosswind landing. Discuss and respond to a single engine failure (hover and takeoff), effects of gross weight on single and/or dual engine performance, single and/or dual engine failure at altitude, engine shutdown in-flight, compressor stall, engine power loss, post-shutdown fire and hot start.

SFAM-103 1.0 T S

Goal. Introduce running landings and autorotations. Practice aircraft emergencies and previously introduced flight procedures. Review normal cockpit procedures.

Requirement. Perform and discuss running takeoff/landing, waveoff, single and/or dual engine wave-off/landing, and power recovery autorotation. Discuss high angle of bank maneuvering and the effects of variables (angle of bank, power required, descent rate, gross weight, temperature, density altitude, etc.) on the performance of the aircraft. Discuss and respond to a dual engine failure at altitude, engine overspeed, all engine failures (hover/takeoff), single and/or dual engine failure (hover/takeoff), and Nf flex shaft failure.

SFAM-104 1.0 T,C,R,H S ACT

Goal. Introduce gear box malfunctions. Review previously introduced emergency and flight procedures.

Requirement. Discuss and respond to an engine chip detector light, control linkage failure, power deterioration, engine oil pressure high caution light, high oil temperature, engine oil low caution light, nose gear box failure, nose gear box chip locator light, accessory gear box oil system failure, accessory gearbox failure, accessory gearbox chip locator light, main gear box failure, main gear box chip locator light, main gear box oil system failure, loss of main gear box lubrication, power train failure, tail rotor drive system failure, tail rotor gear box or intermediate gear box failure, and tail rotor or intermediate gear box chip detector light.

SFAM-105 1.5 T,C,R,H S ACT

Goal. Review all ground, flight, and aircraft emergency procedures.

Requirement

(1) Discuss obstacle takeoff and approach, and smoke and fume elimination. Discuss and respond to total AFCS failure, AFCS computer malfunction (53E), desensitizer failure (53E), BIM/IBIS/Blade Pressure caution light (in-flight), approach and landing with tail rotor control system failure, tail rotor tandem servo malfunction, fuel filter bypass light, and hydraulic fire in main rotor pylon. Discuss AN/ARN 151 GPS system.

(2) Demonstrate and Introduce AN/ARN 151 GPS operation.

ACT. Introduce communication in the CH-53. Discuss and demonstrate sender/receiver responsibilities and overcoming communication barriers. Discuss ICS switchology and techniques, visual, and standard terminology.

SFAM-106 1.0 T,C,R,H S ACT

Goal. Conduct Progress Check.

Requirement. Perform and discuss ground resonance procedure. Discuss and respond to power settling (vortex ring state), settling with power, dynamic rollover, electrical fire, alternating current system failure, rotor damper failure, and lightning strike.

Goal. Introduce and discuss aircrew coordination techniques in the CH-53. Discuss and demonstrate most conservative response rule and the two challenge rule. Introduce task saturation with compound emergencies.

SFAM-107 1.0 T S

Goal. Introduce NS adaptation.

Requirement

(1) Brief and discuss proper NVG focusing procedures, cockpit lighting, blind cockpit drills, aircrew coordination, and NVG malfunctions. Discuss FLIR system and operation (CH-53E)

(2) Introduce NVG goggle/degoggle procedures while wearing flight gear. Introduce the basic NVG FAM pattern and approaches. Introduce aircraft emergencies while wearing NVG's. Demonstrate and introduce FLIR operation and utilization (CH-53E only).

FAM-110 1.5 T,C,H A(CH-53)

Goal. Introduce start, normal ground, and flight procedures including low work and normal approaches.

Requirement. Introduce normal cockpit procedures, starting procedures, radio procedures, taxiing, vertical takeoffs and landings, transition to forward flight, operation of engine trim switches, normal approaches to a hover, ramp operation, and shutdown procedures. Discuss fuel management, dump procedures, and external auxiliary fuel tank jettison parameters. Conduct an area familiarization and local course rules flight.

FAM-111 1.5 T, C A(CH-53)

Goal. Introduce precision hover/low work. Practice start, normal ground and previously introduced flight procedures.

Requirement. Review FAM-110. Demonstrate high angle of bank maneuvers (up to NATOPS limits). Introduce square patterns, turns on the spot, precision (stable) hover, air taxi, single engine and/or dual engine flight characteristics at altitude. Discuss engine restart in-flight. Discuss blade fold, pylon fold, and utility hoist procedures (CH-53E). Discuss effects of pilot induced oscillations (PIO), exhaust gas reingestion [EGR (53E)], and the effects of high AOB maneuvering and subsequent aircraft response.

FAM-112 1.5 T, C A(CH-53)

Goal. Introduce normal FAM procedures not previously introduced and simulated emergency procedures. Review hover/low work and cockpit procedures.

Requirement. Introduce simulated single and/or dual engine failure at altitude, running takeoffs and landings, precision approaches to hover, and practice autorotations with power recovery.

FAM-113 1.5 T A(CH-53)

Goal. Introduce no hover landings. Practice previously introduced FAM and simulated emergency procedures.

Requirement. Introduce the effects of high AOB maneuvers (up to NATOPS limits), no hover landings, single and/or dual engine waveoffs, simulated single and/or dual engine failure during takeoff, simulated single and/or dual engine approaches and landings (running and to a spot), and simulated single and/or dual engine failure above 50 feet AGL. Introduce the effects of aircraft gross weight on single and/or dual engine performance capability.

FAM-114 1.5 T,C,R,H A(CH-53)

Goal. Introduce simulated partial/total AFCS failure. Practice FAM and previously introduced simulated emergency procedures.

Requirement. Introduce obstacle takeoffs, approaches, and partial/total AFCS failure.

FAM-115 1.5 T A(CH-53)

Goal. Introduce high AOB maneuvers. Practice all FAM and simulated emergency procedures.

Requirement. Introduce high AOB maneuvers (up to NATOPS limits), located at neutral CG at half HOGE torque. Practice autorotations, no hover landings, obstacle approaches, and AFCS off. Discuss conditions leading to power settling and settling with power.

FAM-116 1.5 T,C,R,H A(CH-53)

Goal. Practice high AOB maneuvers, FAM, and simulated emergency procedures.

Requirement. Discuss fully and demonstrate the following:

(1) Ground cushion and ground effect.

(2) Effect of wind on translational lift.

(3) Effect of temperature and pressure altitude on power available.

(4) Power required for flight at various airspeeds (hover to VMAX).

(5) Effects of gross weight, altitude, temperature, turbulence, and wind on power required for hover both in and out of ground effect.

(6) Effects of gross weight, altitude, temperature, and turbulence on blade stall.

(7) Maximum speed level flight with turns for existing ambient conditions.

(8) HNVS and FLIR system operation

FAM-117 1.5 T A(CH-53)

Goal. Practice all FAM and introduced simulated emergency procedures. Review as required, to include high AOB maneuvers (up to NATOPS limits).

Requirement. Emphasize all previous emergency procedures.

FAM-118 1.5 T,C,R,H A(CH-53)

Goal. Review all FAM procedures.

Requirement. Emphasize all previous emergency procedures.

FAM-119 1.5 T A(CH-53)

Goal. Conduct Progress check.

Prerequisite. NATOPS open book test completed prior to flight.

FAM-120 1.5 T A(CH-53) N

Goal. Introduce FAM maneuvers at night.

Requirement. Discuss and brief all aircraft lighting systems emphasizing electrical failures. Review normal procedures and maneuvers under conditions of darkness at a lighted airfield. Introduce night basic airwork, low work, and landings with various light configurations. Demonstrate tip path plane awareness. Demonstrate HNVS and FLIR operation (CH-53E only)

FAM-121 1.5 T,C,R,H A(CH-53) N

Goal. Introduce landings utilizing helicopter lighting systems. Practice FAM maneuvers at night.

Requirement. One-half of flight should be conducted at a lighted airfield, one-half in unlit areas. Review FAM-110. Perform simulated obstacle takeoffs and landings and practice dual engine work. Practice landings while using helicopter lighting systems at unlit areas.

FAM-122 1.5 T,C A(CH-53) N NS

Goal. Introduce NVG low work and demonstrate pattern work.

Requirement

(1) Demonstrate and introduce the use of NVGS while performing taxi, basic low work, hover, vertical takeoffs, and landings at an unlit field or packed surface under High Light Level (HLL) ambient light conditions.

(2) Brief and discuss NVG operations, cockpit lighting, crew coordination, comfort level, low altitude emergencies, NVG failures, and inadvertent IMC procedures, aircraft external lighting, depth perception, and scan techniques.

Prerequisites

(1) The Night Imaging and Threat Evaluation (NITE) Lab syllabus.

(2) FAM-120 and FAM-121.

FAM-123 1.5 T,C,R,H A(CH-53) N NS

Goal. Introduce takeoffs/landings and pattern work while using NVGS. Practice NVG low work.

Requirement

(1) Under HLL ambient light conditions at an unlit field or packed surface, review low work, takeoffs, approaches, and landings. Conduct a minimum of five landings.

(2) Brief and discuss cockpit/aircrew coordination, aircraft control, cockpit lighting, low altitude emergencies, NVG failures, inadvertent IMC procedures, approach pattern, depth perception, scan techniques, and aircraft external lighting. Prerequisite. FAM-122.

2. Instruments (INST)

a. Purpose. Develop proficiency in instrument flight procedures while using all installed navigation aids.

b. General

(1) All instrument stage flights should terminate with an instrument approach, when possible.

(2) Pilots may use the simulator for any instrument flight requirement; however, they may use it for no more than 50 percent of the total instrument syllabus requirements. The simulator will not satisfy the OPNAV night minimums requirement.

c. Crew Requirement. IP/RAC/CC (AO required for NVG events).

d. Simulator Training. (5 Events, 5.0 Hours).

e. Flight Training. (4 Flights, 6.0 Hours).

SINST-130 1.0 T,C,R,H S ACT

Goal. Introduce basic instruments, TACAN approaches, and decision making. Review emergency procedures.

Requirement. Discuss ground resonance, power settling (vortex ring state), settling with power, dynamic roll over, and lightning strike. Perform and discuss electrical fire, alternating current system failure, and suspected rotor damper failure. Introduce instrument flight check list, instrument takeoff, level speed change, standard rate timed turns, vertical S-1 pattern, turn pattern, TACAN approach, point-to-point navigation, and holding.

ACT. Introduce decision making in the CH-53. Discuss and demonstrate troubleshooting strategies for degraded aircraft systems in IMC. Demonstrate examples of sound decision making.

SINST-131 1.0 T,C,R,H S ACT

Goal. Introduce partial panel flight and VOR/ADF procedures. Practice emergency procedures.

Requirement. Discuss single/dual/three engine (as necessary) water landing with all gear retracted or improperly lowered, landing with one/two main gear retracted or not locked down, landing with nose gear retracted or not locked down. Discuss and perform hydraulic power supply system failure, utility hydraulic system failure, primary tandem servo malfunction, and landing gear system failure. Introduce Oscar pattern, partial panel flight, VOR/ADF approach and holding.

ACT. Discuss and demonstrate adaptability/flexibility in the CH-53. Discuss changes in mission from the briefing, crew-member incapacitation, and overcoming personality differences within the cockpit and cabin.

SINST-132 1.0 T,C,R,H S ACT

Goal. Introduce ILS/localizer approaches (CH-53E) and mission analysis. Practice TACAN/ADF approaches (CH-53D). Practice aircraft emergency procedures for both types of aircraft.

Requirement. Respond to all previous emergency procedures. Introduce single and/or dual point external switchology/checks, CG hook load indicator (53E), ILS (53E), and localizer approaches (53E). Review TACAN and VOR approaches.

ACT. Introduce mission analysis in the CH-53. Discuss the three stages of mission analysis, and standardized procedures.

SINST-133 1.0 T,C,R,H S ACT

Goal. Introduce unusual attitudes and recovery procedures, PAR and ASR approaches. Practice aircraft emergency procedures.

Requirement. Introduce unusual attitudes and recovery procedures, PAR and ASR approaches. Review all previously taught instrument maneuvers.

ACT. Discuss and introduce situational awareness considerations in the CH-53. Demonstrate task fixation during an instrument approach with an emergency or degraded system.

SINST-134 1.0 T,C,R,H S ACT

Goal. Introduce IMC radio failure and ATC procedures. Review instrument procedures.

Requirement. Discuss and demonstrate knowledge of the HF Radio, OMEGA NAV System, IFR departure, COMM/NAV failure under IMC, and single and/or dual engine missed approach. IFR canned route (Flight planning)

ACT. Discuss and demonstrate leadership principles in the CH-53. Discuss command authority, crewmember relationships in the cockpit and cabin, and division of tasks.

INST-135 1.5 T A/S (CH-53) (N) (NS)

Goal. Introduce basic instrument procedures and instrument coordination patterns.

Requirement. Introduce instrument checklist, ITO, attitude instrument flying, standard rate climbing turns (including needle calibration), recovery from unusual attitudes, vertical S-1 and oscar patterns, partial panel, and AFCS failure.

INST-136 1.5 C,R,H A/S (CH-53) (N) (NS)

Goal. Introduce ADF, VOR, and TACAN procedures as applicable.

Requirement. Review basic instrument work. Introduce and practice ADF(UHF/LF), time-distance checks, ADF tracking, ADF approaches and missed approaches, and operation of the IFF. Introduce VOR procedures tracking, radial changes, holding, approaches, and missed approaches (53E). Introduce TACAN tracking, radial changes, arcing, holding, approaches and missed approaches, and TACAN point-to-point. Discuss approach minimums and helicopter only approaches.

INST-137 1.5 T,C,R,H A/S (CH-53) (N) (NS)

Goal. Introduce precision approaches.

Requirement. Introduce ILS (53E) and PAR procedures. Discuss BDHI/course indicator switches and front and backcourse approaches (53E)

INST-138 1.5 T,C A/S(CH-53) (N) (NS)

Goal. Conduct IFR flight to an outlying airfield. Instrument progress check.

Requirement. Plan, file, brief, and fly an IFR flight away from home field. Introduce OPARS and discuss range performance charts in the NATOPS Manual.

3. Navigation (NAV)

a. Purpose. Navigate without radio navigational aids and identify positions by using charts and maps.

b. Crew Requirement. 140: IP/RAC/CC.
141: IP/RAC/CC/AO.

c. Ground Training. Conversion aircrews qualified and current in navigation in previous type aircraft are exempt.

d. Flight Training. (2 Flights, 4.0 Hours).

NAV-140 2.0 TA(CH-53)

Goal. Introduce visual navigation.

Requirement

(1) While using 1:250,000 and 1:50,000 maps, plan a navigation flight to a minimum of six terrain features. Pilots should conduct this flight between 200 and 500 feet AGL. Introduce in-flight route changes. Stress preselection and use of prominent terrain features.

(2) Brief and discuss navigation techniques, map preparation, checkpoints, tick marks, boundaries, and wind correction for dead reckoning (DR) navigation.

(3) Demonstrate the use of Global positioning System (GPS)

NAV-141 2.0 A(CH-53) N NS

Goal. Introduce NVG navigation under HLL ambient conditions.

Requirement

(1) Plan and navigate to a minimum of six predetermined man made or terrain features while using 1:250,000 scale map. Minimum altitude 200 feet AGL. Stress map interpretation, dead reckoning techniques, and discuss low level hazards such as wires and birds.

(2) Demonstrate the use of the FLIR for navigation (CH-53E only).

Prerequisite. FAM-123.

4. Formation (FORM)

a. Purpose. Develop parade and cruise formation principles and techniques.

b. Crew Requirement. 151: IP/RAC/CC.
152: IP/RAC/CC/AO.

c. Simulator Training. (1 Period, 1.0 Hours).

d. Flight Training. (2 Flights, 3.0 Hours).

SFORM-150 1.0 T,C,R,H S

Goal. Introduce day/night formation principles.

Requirement

(1) Demonstrate and introduce day, night (unaided) and NVG takeoffs, cruise principles, crossovers, and section approaches.

(2) Brief and discuss aircraft lighting, closure rate, recovery from unusual attitudes, aircrew coordination, and comfort level.

FORM-151 1.5 T,C,R,H A(2 CH-53)

Goal. Introduce parade and cruise formation.

Requirement. Introduce section takeoffs, parade position, crossovers, breakups, rendezvous, lead changes, and landings. Discuss cruise turn principles. Demonstrate and introduce cruise formations as contained in the NATOPS Manual.

Prerequisite. CAL-161 (if FORM-151 is conducted to a CAL site).

FORM-152 1.5 T A(2 CH-53) N NS

Goal. Introduce night vision goggle formation procedures.

Requirement

(1) Introduce night section takeoffs, cruise principles crossover, lead changes, and section landings.

(2) Discuss aircraft lighting, closure rate, recovery from unusual attitudes, aircrew coordination and comfort level. Prerequisite. FAM-123, FORM-151. (CAL-162 and 163 if FORM-152 is conducted to a CAL site)

5. Confined Area Landings (CAL)

a. Purpose. Develop takeoff and landing skills in confined areas.

b. Crew Requirement. 161/162: IP/RAC/CC.
163: IP/RAC/CC/AO.

c. Simulator Training. (1 Period 1.0 Hour).

d. Flight Training. (3 Flights, 5.0 Hours).

SCAL-160 1.0 T S NS

Goal. Introduce night systems CAL approaches. Discuss instrument scan requirements and crew coordination.

CAL-161 1.5 T, C, R, H A(CH-53)

Goal. Review precision approaches and introduce their application to CALs.

Requirement

(1) Review main and tail rotor clearance factors over sloping or uneven terrain using approved CAL sites.

(2) Discuss power settling and settling with power.

(3) Brief problems encountered with landings into zones, to include reduced visibility, e.g., sand, dust, and snow.

CAL-162 1.5 T A(2 CH-53)

Goal. Introduce section CAL approaches and landings.

Requirement. Evaluate previous CAL instruction, emphasizing aircrew coordination. Introduce maximum allowable gross weight takeoffs and landings and section tactical approaches and landings in approved CAL sites. Brief problems encountered with section landings into zones, to include reduced visibility; e.g., sand, dust, snow.

Prerequisite. CAL-161 and FORM-151. CAL-162 may be flown in conjunction with FORM-151.

CAL-163 2.0 T A(CH-53) N NS

Goal. Introduce CALs under HLL ambient light conditions using NVGs.

Requirement. Review night CAL approaches and takeoffs with NVGs. Emphasize crew coordination and precision obstacle approaches. Brief crew comfort level, recovery from unusual attitudes, aircraft lighting, and object fixation.

Prerequisite. FAM-122, -123, and CAL-161.

6. External Loads (EXT)

a. Purpose. Develop skills necessary for external cargo operations.

b. General. Prior to EXT-170, refer to operational and safety considerations discussed in the appropriate NATOPS Flight Manual and FMFRP 5-31, Multi-Service Helicopter External Air Transport Manual. Discuss and become thoroughly familiar with all aspects of aircrew coordination applicable to external operations as described in the appropriate NATOPS Flight Manual.

c. Crew Requirement. IP/RAC/CC/AO.

d. External Syllabus Support. Helicopter Support Team (HST).

e. Flight Training. (4 Flights, 5.0 Hours)

EXT-170 1.0 T,C,H A(CH-53)

Goal. Introduce external cargo operations. Single point only for the CH-53E.

Requirement. Review precision hovers. Introduce cargo pickup and release procedures, aircrew coordination, voice signals, hover check, and flight envelopes with external loads. Introduce cargo release modes. Discuss CG internal load computation worksheet, operational power checks, and cargo jettison procedures. Perform a minimum of five hookups and releases, or until proficiency is demonstrated.

EXT-171 1.0 T,C,H A(CH-53) N (NS)

Goal. Introduce external cargo operations at night. Single point only for the CH-53E.

Requirement

(1) Brief aircrew coordination, comfort level, scan techniques, aircraft emergencies, cargo jettison procedures, and HOGE torque requirement.

(2) Use aircraft lighting and landing zone lighting systems. Review external cargo release procedures at night. Perform a minimum of five hookups and releases, or until proficiency is demonstrated.

Prerequisite. EXT-170.

EXT-172 1.5 T,C,R,H A(CH-53)

Goal. Review external cargo operations in the CH-53D. Introduce dual point procedures in the CH-53E.

Requirement

(1) Brief and discuss aircrew coordination, engine emergencies, cargo jettison, and pilot induced oscillations.

(2) Discuss CG load indicator system in the CH-53E. Introduce dual point maximum performance takeoffs and weight computations (CH-53E). Introduce precision placement within 2 meters of intended point. Perform a minimum of five hookups and releases, or until proficiency is demonstrated.

EXT-173 1.5 T,C,R,H A(CH-53) N (N S)

Goal. Review external cargo operations at night in the CH-53D. Introduce dual point procedures at night for the CH-53E.

Requirement

(1) Brief aircrew coordination, comfort level, scan techniques, aircraft emergencies, and cargo jettison procedures.

(2) Use aircraft lighting and zone lighting systems. Review external cargo pickup and release procedures at night.

Prerequisite. EXT-171 (CH-53D)
EXT-172 (CH-53E).

7. Terrain Flight (TERF)

a. Purpose. Introduce skills necessary to perform TERF maneuvers safely. Emphasize the importance of crew coordination, comfort level, and standard terminology.

b. General

(1) MCO P3500.14, T&R Man, Vol 1 requires a designated TERF instructor for all initial TERF flights.

(2) The NWP 3-22.5-CH53 Tactical Manual contains all maneuver descriptions, and the current MAWTS-1 Helicopter Academic Support Package explains all maneuvers. The MAWTS-1 Academic Support Package contains the prerequisite academic lectures that support the TERF stages.

(3) MCO P3500.14 establishes all currency requirements/TERF altitude and airspeed limitations.

(4) The RAC shall complete academic training prior to commencing the TERF flight syllabus.

c. Crew Requirement. IP/RAC/CC/AO.

d. Ground Training. Pilots shall complete "Terrain Flight Introduction" from the MAWTS-1 Academic Support Package prior to the flight.

e. Flight Training. (2 Flights, 3.0 Hours)

TERF-180 1.5 T,C,R,H A(CH-53)

Goal. Demonstrate TERF navigation. Introduce TERF maneuvers.

Requirement

(1) Brief and discuss aircrew coordination, comfort levels, pilot's reduced reaction time, and all low altitude emergency procedures, standardized terminology, meter map contour intervals, common mistakes, and hazard maps.

(2) While using a 1:50,000 scale map, demonstrate TERF navigation.

(3) Demonstrate and introduce operational power checks, masking and unmasking, TERF turns, rolls, bunts, low level quickstops, and low level/contour profiles.

TERF-181 1.5 T A(CH-53)

Goal. Introduce TERF navigation. Practice TERF maneuvers.

Requirement

(1) Brief and discuss aircrew coordination, comfort levels, common terms, obstacle clearance, and low altitude emergencies.

(2) Review TERF maneuvers and introduce contour profile navigation emphasizing vertical relief and vegetation.

8. Review (REV)

a. Purpose. Demonstrate proficiency in performing the duties as a combat capable copilot per NATOPS and appropriate other publications.

b. Crew Requirement. IP/RAC/CC.

c. Ground Training. RACs shall complete NATOPS open and closed book examinations prior to the flight.

d. Flight Training. (1 Flight, 1.5 Hours).

REV-190 1.5 T,C,R,H A(CH-53)

Goal. Review combat capable training.

Requirement. Review and evaluate all FAM stage maneuvers, Instrument stage maneuvers, confined area landings, external cargo procedures1 and if possible, formation flight. RAC is responsible for all previously introduced emergencies.

9. Combat Capable Pilot Check (CCX)

a. Purpose. Demonstrate proficiency in performing the duties as a combat capable copilot per NATOPS and appropriate other publications.

b. General

(1) The RAC is responsible for any/all maneuvers and emergency procedures in the combat capable phase.

(2) A NATOPS qualified instructor shall evaluate this flight.

c. Crew Requirement. IP/RAC/CC.

d. Ground Training. Per the CH-53 NATOPS Flight Manual and OPNAVINST 3710.7_, all RACs shall successfully complete an open and closed book test prior to combat capable pilot check ride. Upon completion of this flight, the RAC will be NATOPS qualified in model as a Helicopter 2nd Pilot (H2P)

e. Flight Training. (1 Flight, 2.0 Hours).

CCX-191 2.0 T,C,R,H E A(CH-53)

Goal. Evaluate systems knowledge of the CH-53 and the capability to perform maneuvers in the combat capable phase, including high AOB maneuvers.

Requirement

(1) Review systems knowledge of the CH-53 to include external lift systems.

(2) Brief and demonstrate proficiency of aircraft emergency procedures per the CH-53 NATOPS Flight Manual.

(3) Demonstrate proficiency and the capability to perform in the combat capable phase to include takeoffs, approaches, instrument procedures, emergency procedures, CALs, high AOB maneuvers (1/2 HOGE weight), and landings.

442. COMBAT READY PHASE. Pilots undergoing instruction in this level must have completed the MAWTS-1 Course Catalog Academic Support Package lectures applicable to this phase of training prior to conducting night systems flights. Night Systems rules of conduct will be per MCO P3500.14. Pilots shall fly all night systems events in this level under ambient light conditions of .0022 LUX or greater except FCLP-273. A pilot under instruction is NSQ HLL (qualified to transport troops in HLL conditions) when the following flights have been completed: FORM-211, CAL-222, CAL-2231 TERF-233, TERF-234, and TAC-281. An NSI is required for all initial qualification and requalification for the following events: FORM-211, CAL-222, CAL-223, TERF233, TERF-234, EXT-241, EXT-242, FCLP-273, and TAC-281. FCLP-273 may be flown in HLL conditions without an NSI if both pilots are NSQ HLL and one pilot is FCLP-273 proficient. FCLP-273 may be flown in LLL conditions without an NSI if both pilots are NSQ LLL and one pilot is FCLP-273 proficient.

1. Familiarization/Instruments (FAM)

a. Purpose. Review day and night familiarization maneuvers, navigation procedures, and basic instrument procedures.

b. General

(1) Pilots will find familiarization maneuver descriptions in the NATOPS Manual.

(2) The NATOPS Instrument Flight Manual defines basic instrument procedures. All instrument stage flights should terminate with an instrument approach when possible.

c. Crew Requirement. P/P/CC.

d. Simulator Training. (1 Period, 1.5 Hours).

d. Flight Training. (1 Flight, 1.5 Hours).

SFAM/FLIR-200 1.5 T, C S

Goal. Review the operational capabilities of the HNVS and FLIR system in the CH-53E. Discuss capabilities, limitations, and aircrew coordination considerations.

Requirement. Review procedures to effectively utilize the HNVS and FLIR. Discuss operational capabilities, limitations, symbology, and aircrew coordination considerations. Fly a preplanned route utilizing the HNVS and FLIR for landing zone indentification, navigation, and hazard detection.

Prerequisite. Completion of the NITE Lab "FLIR Training Course."

FAM/INST-201 1.5 T A/S(CH-53) (N)

Goal. Review day and night FAM maneuvers, navigation above 200', and basic instrument procedures. If applicable, file and fly an instrument round robin.

Requirement. Discuss FAM maneuvers and review basic airwork, and basic instrument procedures. Basic instrument procedures should include turn patterns, vertical S-1 patterns, oscar patterns, and partial panel flight. Include non-precision approaches, precision approaches, and filing procedures. If flown at night, discuss night lighting and use, night scan, and night fixation.

2. Formation (FORM)

a. Purpose. Review formation and introduce tactical formation maneuvering.

b. General

(1) Pilots may find a description of these maneuvers and formations in NWP 3-22.5-CH53 Tactical Manual, the MAWTS-1 Academic Support Package and the MAWTS-1 DM Guide.

(2) Read paragraph 442.

c. Crew Requirement. P/P/CC/AO.

d. Ground Training. Review tactical formation flight in NWP 3-22.5-CH53.

e. Flight Training. (2 Flights, 3.5 Hours).

FORM-210 1.5 T, C A(2 CH-53)

Goal. Review day formation and introduce tactical formation maneuvering.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Closure rates.

(d) Recovery from unusual attitudes.

(e) High density altitude.

(f) High AOB turns/aerodynamics performance.

(g) Lead changes; include "no comm" lead change.

(2) Introduce

(a) Break turns, center turns, pinch/dig, tac turns, in-place turns, split turns, and cross turns.

(b) Combat spread and combat cruise.

(3) Review

(a) Parade position.

(b) Cruise principles.

(c) Crossovers.

(d) Lead changes.

FORM-211 2.0 T, C A(2 CH-53) N NS

Goal. Introduce night system formation flight and navigation.

Requirement

(1) Discuss

(a) Aircraft lighting.

(b) Closure rate.

(c) Recovery from unusual attitudes.

(d) Aircrew coordination.

(e) Comfort level.

(f) NVG emergencies.

(g) Inadvertent IMC.

(h) Dead reckoning techniques.

(i) Low levelhazards.

(2) Introduce

(a) NS formation flight.

(b) NS navigation.

(3) Review. FORM-210.

(4) Conduct

(a) Plan and navigate to a minimum of six predetermined man made or terrain features while using a 1:250,000 and 1:50,000 scale maps. Minimum altitude 200 feet AGL.

(b) Conduct a minimum of one lead change.

3. Confined Area Landings (CAL)

a. Purpose. Conduct takeoffs and landings in confined or mountainous areas.

b. General. Read paragraph 442.

c. Crew Requirement. CAL-220,221: P/P/CC.
CAL-222,223: P/P/CC/AO.

d. Flight Training. (4 Flights, 6.5 Hours).

CAL-220 1.5 T,C A(CH-53)

Goal. Review CAL approaches and introduce tactical approaches to confined areas/mountainous terrain. Introduce simulated high gross weight conditions.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Power settling.

(c) Settling with power.

(d) Low altitude emergencies.

(e) Engine emergencies.

(f) Obstacle clearance.

(g) Maneuvering at high gross weight/density altitude (GW/DA).

(h) High AOB turns/aerodynamic performance.

(i) HNVS and FLIR capabilities and limitations.

(2) Introduce

(a) CAL/MAL approaches.

(b) HNVS and FLIR operation.

CAL-221 1.5 T,C,R,H A(2 CH-53)

Goal. Introduce section CALs.

Requirements

(1) Discuss

(a) Aircrew coordination.

(b) Obstacle clearance.

(c) Lead changes.

(d) Tactical formations.

(e) Reduced visibility section landings.

(2) Introduce. Section takeoffs, approaches, landings, emphasizing CALs/MALs.

Prerequisite. CAL-220 and FORM-210.

CAL-222 1.5 T, C A(CH-53) N NS

Goal. Introduce CALs/MALS with NVGS, emphasizing low work.

Requirements

(1) Discuss

(a) Aircrew coordination.

(b) Landing zone Lighting.

(c) Cockpit lighting.

(d) Low altitude emergencies.

(e) NVG failures.

(f) Inadvertent IMC procedures.

(g) Landings with reduced visibility.

(h) Waveoffs.

(i) HNVS and FLIR capabilities and limitations.

(2) Introduce. NVG CALs/MALs (minimum of five).

(3) Review

(a) Low work.

(b) HNVS and FLIR operations.

Prerequisite. CAL-220.

CAL-223 2.0 T,C,R A(2 CH-S3) N NS

Goal. Introduce NVG section CALs.

Requirement

(1) Discuss

(a) Same as CAL-222.

(b) Lead changes.

(c) Tactical formations.

(d) Reduced visibility during section landings.

(2) Introduce

(a) Section takeoffs, approaches, landings using NVGs.

(b) Conduct at least one lead change.

(c) Perform a minimum of four landings as lead and four as wingman.

Prerequisite. CAL-221, CAL-222 and FORM-211.

4. Terrain Flight (TERF)

a. Purpose. Conduct TERF maneuvers/navigation and introduce section maneuvering in the day and night TERF environment.

b. General

(1) A TERF Instructor (TERFI) is required for all day TERF instructional flights and an NSI is required for all night TERF instructional flights. TERF rules of conduct are per MCO P3500.14.

(2) Read paragraph 442.

c. Crew Requirement. P/P/CC/AO.

d. Ground Training. Completion of MAWTS-1 Course Catalog Academic Support Package TERF lectures prior to commencing this stage of training.

e. Flight Training. (S Flights, 8.5 Hours).

TERF-230 1.5 T, C A(CH-53)

Goal. Review TERF navigation.

Requirement

(1) Discuss

(a) Comfort levels.

(b) Aircrew coordination.

(c) Common terminology.

(d) Route and checkpoint selection.

(e) Orientation techniques.

(f) Maneuvering at low altitude and high gross weight/high density altitude.

(g) High AOB turns/aerodynamic performance.

(h) Low altitude emergencies.

(i) Aircraft performance charts.

(j) Obstacle clearance.

(2) Review

(a) Masking/unmasking.

(b) Quick stop.

(c) TERF turn and roll.

(d) Bunts.

(e)Low level and contour profiles.

(3) Conduct

(a) Navigate and remain oriented within 300 meters.

(b) Use 1:50,000 and 1:250,000 scale maps.

TERF-231 1.5 T, R A(CH-53)

Goal. Review TERF-230.

Requirement

(1) Discuss. Same as TERF-230.

(2) Review. Same as TERF-230.

(3) Conduct. Navigate and remain oriented within 200 meters.

(4) Prerequisites. TERF-230.

TERF-232 1.5 T,C,R,H A(2 CH-53)

Goal. Review TERF-231. Introduce formation TERF.

Requirement

(1) Discuss

(a) Same items as in TERF-231.

(b) Tactical flight considerations.

(c) Tactical formation maneuvers in a TERF environment.

(2) Review. Same as TERF-231.

(3) Conduct

(a) Navigate and remain oriented within 200 meters.

(b) Incorporate tactical formation maneuvering in the navigation of the route.

(4) Prerequisites. FORM-210 and TERF-231.

TERF-233 2.0 T, C A(CH-53) N NS

Goal. Introduce TERF navigation while using NVGs.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) TERF navigation considerations while using NVGs.

(d) Map preparation and route cards.

(e) HNVS and FLIR capabilities and limitations.

(2) Introduce. TERF navigation flight while using NVGs.

(3) Review

(a) NVG CALs and TERF-230.

(b) HNVS and FLIR operations.

(4) Conduct

(a) Route minimum of 75 mm.

(b) Perform a minimum of five landings.

(c) Remain oriented within 300 meters.

(d) Use 1:250,000 or 1:50,000 maps, as appropriate.

Prerequisites. CAL-222 and TERF-232.

TERF-234 2.0 T,C,R,H A(2 CH-53) N NS

Goal. Introduce TERF navigation and review section CALs while using NVGs.

Requirement

(1) Discuss. Same as TERF-233.

(2) Review. CAL-223.

(3) Conduct

(a) Route minimum of 100 nm.

(b) Conduct a minimum of one lead change.

(c) Perform a minimum of three landings as lead and three as wingman.

(d) Use both 1:250,000 and 1:50,000 maps.

(e) Remain oriented within 200 meters.

Prerequisites. FORM-211, CAL-223, and TERF-233.

5. External Loads (EXT)

a. Purpose. Develop skills necessary for external loads in confined areas and operating the aircraft near its maximum gross weight for the given ambient conditions.

b. General

(1) Review operational and safety considerations discussed in the appropriate NATOPS Flight Manual and FMFRP 5-31, Vol 1, Multi-Service Helicopter External Air Transport Manual. Each flight requires five pickups and deliveries. Heavy lift should be emphasized, i.e., operating the aircraft at or near its maximum gross weight fir the given ambient conditions.

(2) Read paragraph 442.

(3) EXT-241 requires an NSI for initial qualification and requalification. EXT-242 requires an NSI unless both pilots are NSQ HLL and the HAC is EXT-241 proficient. Conduct initial flight in HLL conditions.

c. Crew Requirement. P/P/CC/AO.

d. External Syllabus Support. HST.

e. Flight Training. (3 Flights, 4.5 Hours).

EXT-240 1.5 T,C,R,H A(CH-53)

Goal. Review external lift procedures and introduce precision approach techniques for conducting external operations to a confined area.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Preflight planning; to include power computations, weight and balance considerations, and operational power checks.

(d) Power settling.

(e) Engine failure.

(f) Cargo jettison procedures.

(g) Inadvertent hook release.

(h) Pilot Induced Oscillations (PIO)

(i) HST operation and safety brief.

(j) Waveoff.

(k) Reduced visibility conditions.

(2) Introduce

(a) Precision load placement within 2 meters of intended point of delivery.

(b) CH-53Es shall use both single and dual point systems, as applicable.

(3) Review

(a) External lift procedures.

(b) In-flight weight computations.

Prerequisite. CAL-220.

EXT-241 1.5 T, C A(CH-53) N NS

Goal. Introduce NS single point externals.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Low altitude emergencies.

(d) NVG failures.

(e) Inadvertent IMC procedures.

(f) Reduced visibility zones.

(g) LZ lighting.

(h) Pendant and load lighting.

(i) Waveoffs.

(j) Night external operation considerations.

(k) HST operation and safety brief.

(l) Aircraft characteristics when operating at or near MGW.

(2) Introduce. NVG single point externals.

(3) Review. EXT-240.

Prerequisites. CAL-222 and EXT-240.

EXT-242 1.5 T,C,R,H A(CH-53) N NS

Goal. Introduce NS dual point externals.

Requirement

(1) Discuss Same as EXT-241

(2) Introduce. NVG dual point externals (single point external review for CH-53D).

(3) Review. EXT-240.

Prerequisites. CAL-222 and EXT-240.

6. Defensive Measures (DM)

a. Purpose. Introduce skills in evading both enemy surface and air threats, incorporating EW/IR countermeasures in a low-to-medium threat environment.

b. General. Pilots shall conduct this stage in a simulator against ground-to-air and air-to-air threats. The use of an APR-39 trainer will prepare aircrew prior to the event. Pilots should use the threat simulators in conjunction with classroom instruction.

c. Crew Requirement. P/P.

d. Ground Training

(1) Pilots shall complete the MAWTS-1 academic syllabus for DM, as specified in the MAWTS-1 Course Catalog, prior to commencing the flight phase.

(2) Review applicable chapters of NWP 3-22.5-CH53 Tactical Manual Vol I and II for EW/IR countermeasures, ASE, and tactical formation maneuvering. Consult the MCM 3-1 for threat systems information.

e. Simulator Training. (1 Period, 1.5 Hour)

SDM-250 1.5 T, C,R S (NS)

Goal. Introduce the APR-39 Radar Warning System, AAR-47, ALE-39 switchology and programming, and EW/IR countermeasures against AAA and IR and RADAR SAMs.

Requirement

(1) Discuss

(a) Operations of the ALE-39, APR-39, ALQ-157, and AAR-47.

(b) The strengths and weaknesses of each ASE system versus ground-to-air and air-to-air threats.

(c) Aircrew coordination as it applies to the use of ASE.

(d) EW countermeasures against AAA, IR and RADAR SAMs.

(e) Different tactical EW/IR countermeasures (Mk-46, MJU-8 and MJU-27B flares; RR-129 and RR-144 chaff).

(f) Tactical maneuvering to counter the threat.

(2) Introduce

(a) Discussion items.

(b) Search, track, and missile alert signals of all applicable threat systems on APR-39 and AAR-47.

(c) Tactical maneuvering and ASE employment to counter the threat.

7. Aerial Refueling (AR) (CH-53E)

a. Purpose. Introduce aerial refueling.

b. General. Discuss and become thoroughly familiar with all AR procedures and aspects of aircrew coordination as described in the CH-53E NATOPS Manual and the NATOPS Air Refueling Manual (NAVAIR 00-8-T-110).

c. Crew Requirement. P/P.

d. Ground Training. Pilots shall consult the MAWTS-1 Course Catalog for the recommended lectures in the Academic Support Package applicable to this stage of flight, in addition to the MAWTS-1 NVD Manual and CH-53 TACMAN.

e. Simulator Training. (1 Period, 1.0 Hour).

SAR-260 1.0 T, C, R, H S (NS)

Goal. Introduce aerial refueling.

Requirement. Introduce basic scan and flight techniques required to refuel from the KC-130 in D/N/NVG conditions.

8. Field Carrier Landing Practice (FCLP)

a. Purpose. Introduce day and night flight operations from a ship platform.

b. General. Discuss and become familiar with all aspects of shipboard operations and aircrew coordination applicable to the carrier qualification stage as described in the appropriate CH-53 NATOPS flight manual, NWP-42, LHA/LPH/LHD NATOPS, and OPNAVINST 3710.7. Each flight requires five takeoffs and landings. FCLP-273 requires a designated NSI unless both pilots are NSQ HLL or NSQ LLL as appropriate for the ambient conditions.

c. Crew Requirement. P/P/CC. AO required for FCLP-273.

d. Ground Training. Review shipboard operations and CQ procedures contained in the appropriate NATOPS Flight Manual, NWP-42, LHA/LPH/LHD NATOPS, and OPNAVINST 3710.7 prior to commencing this stage of training.

e. Simulator Training. (1 Period, 1.0 Hour)

f. Flight Training. (3 Flights, 3.0 Hours)

SCO-270 1.0 T, C, H S (NS)

Goal. Introduce day and night shipboard flight operations.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Terminology.

(c) Shipboard day and night landing patterns.

(d) Shipboard instrument procedure.

(e) Shipboard emergencies procedures.

(f) Blade/pylon fold procedures.

(2) Introduce

(a) The LHA, LPH, LHD, and LPD day and night holding, approach and landing patterns.

(b) Fly one TACAN and one CCA approach in IMC or night conditions.

FCLP-271 1.0 T, C, H A(CH-53)

Goal. Introduce day FCLP.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Wind envelopes.

(d) LSE signals.

(e) Deck procedures.

(f) Communication procedures.

(2) Introduce

(a) FCLP pattern.

(b) Approaches.

(c) Landings.

(3) Review. SCQ-270.

FCLP-272 1.0 T,C,H A(CH-53) N

Goal. Introduce night, unaided FCLPs.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Scan techniques.

(d) Aircraft/deck lighting.

(2) Introduce. Unaided, night FCLPs.

(3) Prerequisite. FCLP-271.

FCLP-273 1.0 T, C, H A(CH-53) N NS

Goal. Introduce NG FCLPs.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Scan techniques.

(d) NVG aircraft/deck lighting.

(e) NVG landing techniques.

(f) NVG emergencies.

(2) Introduce. NVG FCLPs.

(3) Prerequisite. CAL-222 and FCLP-271.

9. Tactics (TAC)

a. Purpose. Plan, brief, execute and debrief a tactical operation.

b. General

(1) The pilot under instruction will assist in the planning, briefing, and debriefing each flight. Pilots shall conduct this flight under the standards required in MCO 3501.4, MCCRES, Volume IX, Marine Heavy Helicopter Squadrons and/or MCO 3501.8 MCCRES, Volume IX, Special Operations, and CH-53 Tactical Manual. Tac-281 requires an NSI for initial instruction.

(2) Read paragraph 442.

c. Crew Requirement. P/P/CC/AO.

d. Ground Training. Consult the MAWTS-1 Course Catalog for the recommended Academic Support Package lectures applicable to this stage of training.

e. Flight Training. (2 Flights, 4.0 Hours).

TAC-280 2.0 T A (2 CH-53)

Goal. Introduce assault support tactical procedures in a low Threat environment, using MCCRES standards as a reference for mission

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Emissions control (EMCON)

(c) Planning based on METT-T.

(d) TACC/DASC or TACC/HDC procedures.

(e) Air and ground unit coordination.

(f) Defensive measures.

(g) Route planning.

(2) Introduce

(a) Tactical mission planning, briefing, execution, and debriefing in support of assigned tasks.

(b) Objective area planning.

(c) Route planning and escort tactics.

(d) DASC/HDC control.

(e) EMCON conditions.

(3) Conduct

(a) Route minimum of 125 nm.

(b) Minimum of one "no comm" lead change.

(c) Perform a minimum of three landings as lead and three landings as wingman.

(d) Use 1:250,000 and 1:50,000 maps as appropriate.

(e) Remain oriented within 100 meters and arrival in the objective area within + 1 minute of L-hour.

(4) Prerequisites. TERF-232.

TAC-281 2.0 T A(2 CH-53) N NS

Goal. Introduce assault support tactical procedures in a low threat environment at night, using MCCRES standards as a reference for mission planning.

Requirement

(1) Discuss

(a) Items per TAC-280.

(b) Night systems planning considerations.

(c) HNVS and FLIR capabilities and limitations.

(2) Review

(a) TAC-280.

(b) HNVS and FLIR operations.

(3) Conduct. Same as TAC-280.

Prerequisite. TERF-234.

443. COMBAT QUALIFICATION PHASE. Pilots undergoing instruction in this phase must have completed the MAWTS-1 Course Catalog Academic Support Package lectures applicable to this phase of training prior to conducting night systems flights. Night Systems rules of conduct will be per MCO P3500.14; i.e., the PUI may begin the LLL syllabus when designated NSQ HLL. A pilot under instruction is NSQ LLL (qualified to transport troops in all light level conditions) at the completion of the following flights: CAL-320, CAL-321, TERF-330, TERF-331, and TAC-381. Pilots shall fly the above listed flights and EXT-342, under ambient light conditions of less than .0022 LUX. An NSI is required for initial qualification and requalification for the following events: CAL-320, CAL-321, TERF-330, TERF-331, EXT-342, EXT-343 and TAC-381. EXT-343 may be flown in HLL conditions without an NSI if both pilots are NSQ HLL and EXT-241 (or EXT-242 if conducting dual point external) proficient. EXT-343 may be flown in LLL conditions without an NSI if both pilots are NSQ LLL and EXT-341 and EXT-342 proficient. Pilots may fly all other night Systems flights in this level under HLL or LLL conditions.

1. Confined Area Landings (CAL)

a. Purpose. Conduct CALs in low light level conditions (below .0022 LUX)

b. General

(1) Refer to the appropriate CH-53 NATOPS Flight Manual, NWP 3-22.5-CH53 Tactical Manual, and MAWTS-1 NVQ Manual for various LZ lighting configurations. This stage of instruction requires an NSI for initial qualification and all requalification.

(2) Read paragraph 443.

c. Crew Requirement. P/P/CC/AO.

d. Prerequisite. Pilot under instruction must be NSQ HLL.

e. Flight Training. (2 Flights, 3.5 Hours).

CAL-320 1.5 T, C A(CH-53) N NS

Goal. Perform NVG low work and CALs during low light level conditions.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Low altitude emergencies.

(d) NVG emergencies.

(e) Inadvertent IMC.

(f) Low light level planning considerations.

(2) Introduce

(a) Low light level CALS (Minimum of five)

(b) Low work.

(3) Review. CAL-222

Prerequisite. Pilot under instruction must be NSQ HLL.

CAL-321 2.0 T, C, R A(2 CH-53) N NS

Goal. Develop proficiency in section CALs during low light level conditions.

Requirement

(1) Discuss

(a) Same as CAL-320.

(b) Closure rates.

(c) Visual illusions.

(2) Introduce

(a) Section CALs/MALs under low light level conditions.

(b) Conduct at least one lead change.

(c) Perform a minimum of four landings as lead and four as wingman.

(3) Review. NVG formation flight, section CALs, and navigation.

(4) Prerequisite. CAL-320.

2. Terrain Flight (TERF)

a. Purpose. Develop TERF navigation and flight skills under low light level conditions.

b. General

(1) All night TERF instructional flights require a designated NSI. TERF rules of conduct are per MCO P3500.14.

(2) Read paragraph 443.

c. Crew Requirement. P/P/CC/AO.

d. Flight Training. (2 Flight, 3.5 Hours)

TERF-330 1.5 T, C A(CH-53) N NS

Goal. Develop proficiency in tactical NVG navigation during low light level conditions.

Requirement

(1) Discuss

(a) Low light level planning considerations.

(b) Aircrew coordination.

(c) Comfort level.

(d) Obstacle recognition and clearance.

(e) Closure rates.

(f) Visual illusions.

(g) HNVS and FLIR capabilities and limitations.

(2) Review

(a) Low light level NVG CALs.

(b) HNVS and FLIR operations.

(3) Conduct

(a) Route to be a minimum of 75 nm.

(b) Perform landings until demonstrated proficiency1 minimum of five landings.

(c) Remain oriented within 300 meters.

(d) Use 1:250,000 or 1:50,000 maps, as appropriate.

Prerequisite. CAL-320.

TERF-331 2.0 T, C, R, H A(2 CH-53) N NS

Goal. Develop proficiency in tactical NVG formation flight and navigation during low light level conditions.

Requirement

(1) Discuss

(a) Low light level planning considerations.

(b) Aircrew coordination.

(c) Comfort level.

(d) Obstacle recognition and clearance.

(e) Closure rates.

(f) Visual illusions.

(g) Formation flight discipline.

(2) Review. Section CALs.

(3) Conduct

(a) Route to be a minimum of 100 nm.

(b) Perform a minimum of one lead change.

(c) Perform a minimum of three landings as lead and three as wingman.

(d) Remain oriented within 200 meters.

(e) Use 1:250,000 or 1:50,000 maps, as appropriate.

Prerequisite. CAL-321.

3. External Loads (EXT)

a. Purpose. Develop proficiency with heavy lift external loads from confined areas in the TERF environment.

b. General

(1) Each flight requires a minimum of five successful pickups and deliveries to complete EXT-340 and EXT-342. Pilots should practice externals with heavy lift FMF equipment.

(2) TERFI required for initial qualification and requalification of EXT-341.

(3) Pilots may transport loads either single or dual point, as appropriate.

(4) Read paragraph 443.

c. Crew Requirement. P/P/CC/AO.

d. Ground Training. Consult FMFRP 5-31 VOL. I-III (Basic Operation/ Equipment, Single and Dual Point Hook Procedures) Multi-Service Helicopter External Air Transport Manual and NWP 3-22.5-CH53 Tactical Manual.

e. External Syllabus Support. HST.

f. Flight Training. (4 Flights, 6.5 Hours).

EXT-340 1.5 T A(CH-53)

Goal. Review of heavy external lift procedures. The intent is to gain experience operating in conditions approaching maximum airframe performance within the boundaries of existing safety considerations.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) HST operation/safety brief.

(d) Low altitude emergencies.

(e) Effects of wind.

(f) Effects of high density altitude.

(g) Preflight planning, including power computations1 weight and balance considerations, and operational power checks.

(h) Effects of high AOB turns.

(i) Cargo jettison procedures.

(j) PIO/PAO.

(k) Load handling characteristics.

(l) Power settling/settling with Power.

(2) Demonstrate/Introduce. Techniques for heavy lift of FMF equipment.

(3) Conduct. Use appropriate heavy lift substitute if FMF equipment is not available.

Prerequisite. EXT-240.

EXT-341 1.5 T, C A(CH-53)

Goal. Introduce external flight in the low level and contour profiles. Emphasize TERF flight with an external load. Minimum of one pickup and delivery required. TERFI required.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Preflight planning, including power computations, weight and balance considerations, and operational power checks.

(d) Power settling/settling with power.

(e) Low altitude emergencies.

(f) Cargo jettison procedures.

(g) PIO/PAO.

(h) HST operation/safety brief.

(i) Waveoffs.

(j) Reduced visibility conditions.

(k) Terrain/obstacle clearance.

(l) Route planning considerations.

(2) Introduce. TERF externals in the low level and contour profiles.

(3) Review

(a) Single and/or dual point procedures.

(b) TERF maneuvers.

Prerequisite. TERF-231 and EXT-240.

EXT-342 1.5 T,C,R,H A(CH-53) N NS

Goal. Introduce low light level NVG externals, dual point preferred.

Requirement

(1) Discuss

(a) Same as EXT-241 and -242.

(b) Loss of visual reference.

(2) Introduce. Low light level NVG externals.

(3) Review. EXT-241 and -242.

Prerequisites. EXT-241, -242 and CAL-320.

EXT-343 2.0 T, C A(CH-53) N NS

Goal. Introduce NVG external flight in the low level and contour profiles. Emphasize TERF flight with an external load. Minimum of one pickup and delivery required. EXT-343 may be flown in HLL conditions without an NSI if both pilots are NSQ HLL and EXT-241 (or EXT-242 if conducting dual point) proficient. EXT-343 may be flown in LLL conditions without an NSI if both pilots are NSQ LLL and EXT-341 and EXT-342 proficient.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Preflight planning, including power computations1 weight and balance considerations, and operational power checks.

(d) Power settling/settling with power.

(e) Low altitude emergencies.

(f) Cargo jettison procedures.

(g) PIO/PAO.

(h) HST operation/safety brief.

(i) Flight envelopes of various loads.

(j) Pendant and load illumination techniques.

(k) NVG emergencies.

(l) Moon angle/shadowing.

(m) Waveoffs.

(n) Reduced visibility conditions.

(o) Terrain/obstacle clearance.

(2) Introduce. Night TERF externals in the low level and contour profiles.

(3) Review

(a) Single and/or dual point procedures.

(b) TERF maneuvers.

Prerequisite. EXT-241 or 242, 341 (342 if LLL)

4. Defensive Measures (DM)

a. Purpose. Develop proficiency in acquiring and avoiding enemy surface-to-air threat, using EW/IR countermeasures and defensive measures in a low-to-medium threat environment. Upon completion of this stage, the pilot shall be able to effectively maneuver a multi-plane flight against low altitude surface-to-air threats.

b. General. Pilots shall conduct this stage against both electromagnetic and IR threats. The utilization of an EW range with threat systems to include electromagnetic and ground based threat simulation; e.g., smokey SAMs, hand-held pyrotechnics, etc., will greatly enhance aircrew training. Use of the APR-39 and ALE-39 trainer or simulator will aid in preparing aircrew prior to flight. DM-350 requires a DM instructor for initial qualification and requalification. Pilots undergoing this stage of instruction must be current and proficient in TERF-232. Continued training is not contingent upon completion of SDM-250. However, pilots should use threat simulators in conjunction with classroom instruction.

c. Crew Requirement. P/P/CC/AO.

d. Ground Training

(1) Pilots shall complete the MAWTS-1 academic syllabus for DM, specified in the MAWTS-1 Course Catalog, prior to commencing the flight phase.

(2) Review applicable chapters of NWP 3-22.5-CH53 Tactical Manual Vol I and II for EW/IR countermeasures, ASE, and tactical formation maneuvering. Consult the MCM 3-1 for threat systems information.

(3) Complete the applicable classes per the MAWTS-1 ASP prior to DM-350.

e. Flight Training. (1 Flight, 2.0 Hours).

DM-350 2.0 T,C,R A(2 CH-53) (N) (NS)

Goal. Introduce DM procedures and ASE employment. Practice basic operations and test procedures for installed ASE. Introduce and practice defensive measures against various surface-to-air threats per NWP 3-22.5-CH53 Tactical Manual.

Requirement

(1) Discuss

(a) Same as SDM-250.

(b) Aircrew coordination.

(c) Section tactics against surface-to-air threat systems.

(d) Use of radar horizons, ground clutter, radar resolution cells, and radar masking techniques as they relate to specific air defense systems.

(e) Defensive measures against surface-to-air IR threats.

(f) ASE employment.

(2) Introduce

(a) Various threat signatures concentrating on threat recognition and detection.

(b) SAM evasive maneuvers coordinated with the dispensing of chaff and flares.

(c) Section maneuvering against IR missiles or low altitude radar guided threats on an EW range, if available.

(d) Practice section threat avoidance, masking, and the use of chaff and flares. Each run should include ingress to a specific objective with a different egress.

Prerequisites. TERF-232 proficient and SDM-340.

Ordnance. 30 chaff and 30 flares, or as range requirements permit.

5. Aerial Refueling (AR) (CH-53E)

a. Purpose. Develop proficiency in aerial refueling.

b. General

(1) Discuss and become thoroughly familiar with all aspects of aircrew coordination applicable to aerial refueling as described in the CH-53E NATOPS Manuals and the NATOPS Air Refueling Manual (NAVAIR 00-8-T-110). The pilot under instruction must be NSQ (HLL) current to fly initial AR-362 under HLL conditions; moreover, he must be NSQ (LLL) current to fly initial AR-362 under LLL conditions. If pilots do not meet these conditions, the ARI shall also be an NSI. After pilots obtain initial currency, both pilots need only to be AR-362 complete and current to conduct NVG aerial refueling operations. Successful completion of each flight requires a minimum of three contacts (and demonstrated proficiency) and movement to the refueling position.

(2) Initial qualification and requalification require an ARI.

c. Crew Requirement. P/P/CC. AO required for AR-362.

d. Ground Training. Pilots shall consult the MAWTS-1 Course Catalog for the recommended lectures in the Academic Support Package applicable to this stage of flight, in addition to the MAWTS-1 NVD Manual and CH-53 TACMAN.

e. Flight Training. (3 Flights, 4.5 Hours)

AR-360 1.5 T, C, H A(CH-53)

Goal. Introduce aerial refueling.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Rendezvous procedures, both VMC and IMC.

(d) Join-up procedures.

(e) Airspeeds/altitudes.

(f) Crossovers.

(g) Hose response/markings.

(h) Inadvertent disconnects.

(i) Aerial refueling emergencies.

(j) Control inputs and tip path awareness.

(k) Blade stall.

(l) NATOPS aerial refueling envelope chart.

(2) Demonstrate/Introduce

(a) Rendezvous/join-up.

(b) Observation/pre-contact/contact/ refuel/disconnect positions.

(c) Aircraft movement around the tanker.

(d) Post aerial refueling procedures.

AR-361 1.5 T,C,R,H A(CH-53)

Goal. Demonstrate proficiency in day AR techniques and procedures.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Rendezvous procedures, both VMC and IMC.

(d) Join-up procedures.

(e) Airspeeds/altitudes.

(f) Crossovers.

(g) Hose response/markings.

(h) Inadvertent disconnects.

(i) Aerial refueling emergencies.

(j) Control inputs and tip path awareness.

(k) Blade stall.

(l) NATOPS aerial refueling envelope chart.

(2) Introduce. Refueling from both sides of the tanker if available.

(3) Review. AR-360.

Prerequisite. AR-360.

AR-362 1.5 T, C, R, H A(CH-53) N NS

Goal. Introduce night systems aerial refueling.

Requirement. Review AR-361 utilizing NVGs.

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Closure rates.

(d) Depth perception.

(e) Receiver/tanker lighting.

(f) Visual illusions.

(g) Inadvertent IMC.

(h) Emergency procedures.

(i) Visual signals.

(j) NVG emergencies.

(k) Unaided night AR.

(2) Introduce. NVG aerial refueling.

Prerequisite. AR-361.

6. Carrier Qualification (CQ)

a. Purpose. Qualify pilots in day and night flight operations from a ship platform.

b. General. Discuss and become familiar with all aspects of shipboard operations and aircrew coordination applicable to the carrier qualification stage as described in the appropriate NATOPS Flight Manual, NWP-42, LHA/LPH/LHD NATOPS, and OPNAVINST 3710.7 . Each inital instructional flight requires five takeoffs and landings.

c. Crew Requirement. P/P/CC. AO required for CQ-372.

d. Prerequisites. Pilots should complete the appropriate FCLP flight prior to flying the similar CQ flight. CQ-372 requires a designated NSI unless both pilots are NSQ HLL or NSQ LLL for appropriate ambient conditions.

e. Ground Training. Review shipboard operations and CQ procedures as contained in the appropriate NATOPS Flight Manual, NWP-42, LHA/LPH/LHD NATOPS and OPNAVINST 3710.7__ prior to commencing this stage.

f. Flight Training. (3 Flights, 4.5 Hours).

CQ-370 1.5 T, C, H A(CH-53)

Goal. Introduce day CQs.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Closure rate.

(d) Wind envelopes.

(e) LSE signals.

(f) Voice procedures/Lost communication procedures.

(g) Shipboard landing patterns.

(h) Shipboard instrument patterns.

(i) Shipboard emergencies.

(j) Air control in shipboard environment.

(2) Introduce. Day CQ.

Prerequisite. SCQ-270.

CQ-371 1.5 T, C, H A(CH-53) N

Goal. Introduce night, unaided CQs.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Spatial disorientation.

(d) Aircraft/deck lighting.

(2) Introduce. Unaided, night CQs.

(3) Review. FCLP-272 and CQ-370.

Prerequisites. FCLP-272 and CQ-370. SCQ-270 if available.

CQ-372 1.5 T,C,R,H A(CH-53) N NS

Goal. Introduce NVG CQs.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Scan techniques.

(d) NVG aircraft/deck lighting.

(e) NVG landing techniques.

(f) NVG emergencies.

(2) Introduce. NVG CQs.

Prerequisite. FCLP-273 and CQ-370. SCQ-270 if available.

7. Tactics (TAC)

a. Purpose. Conduct missions in a low-to-medium threat environment while part of a multiple aircraft flight, using escort aircraft, if available.

b. General

(1) All mission briefs require an intelligence scenario. To the greatest extent possible, incorporate the employment of escort aircraft (fixed- or rotary-wing), ALE-39, AAR-47, HNVS and FLIR, APR-39, the .50 caliber machine gun, and use of the AR-5/M-24 gas masks. Pilots shall conduct these flights under the standards required in MCO 3501.4, MCCRES, Volume III, Marine Heavy Helicopter Squadrons and/or MCO 3501.8 MCCRES, Volume IX, Special Operations. Pilots shall use the NWP 3-22.5-CH53 Tactical Manual as a source document for planning and developing proficiency in planning, briefing, execution, and debriefing. TAC-381 must be flown under LLL conditions. TAC-381 requires an NSI for initial qualification and requalification.

(2) Read paragraph 443.

c. Crew Requirement. P/P/CC/AO.

d. Flight Training. (2 Flights, 4.0 Hours).

TAC-380 2.0 T A(2+ ACFT)

Goal. Introduce assault support tactical procedures in a medium threat environment, using MCCRES standards as a reference for mission planning.

Requirement

(1) Discuss

(a) Objective area planning.

(b) Mission planning systems, to include routing and LZ selection.

(c) Command and control/C3 relationships.

(d) EMCON procedures.

(e) Threat systems and countertactics, as defined in defensive measures.

(f) Weapons preflight, control, and employment.

(g) Aircrew coordination.

(h) Comfort level.

(i) Flight leadership.

(2) Review

(a) TERF considerations.

(b) External/internal movement of cargo, supplies and personnel.

(c) Defensive measures.

Prerequisites. TAC-280. SDM-250, if available. Pilots shall reference paragraph 443.4.b.

Ordnance. .50 caliber ammunition, 30 chaff and 30 flares.

TAC-381 2.0 T A(2+ ACFT) N NS

Goal. Introduce assault support tactical procedures in a medium threat environment during low light level conditions; use MCCRES standards as a reference for mission planning.

Requirement

(1) Discuss

(a) Items per TAC-380.

(b) Night systems planning considerations.

(2) Review. TAC-380.

Prerequisites. TERF-331 Pilots shall reference paragraph 443.4.b.

Ordnance. .50 caliber ammunition, 30 flares and 30 chaff.

8. Flight Leadership (FL)

a. Purpose. Demonstrate proficiency in specific flight skills, systems knowledge, and flight leadership traits.

b. General

c. Crew Requirement. P/P/CC/AO (as required)

d. Flight Training. (5 Flights, 7.5 Hours).

FL-390 1.5 A(CH-53)

Goal. Conduct HAC review.

Requirement. This flight will review all practicable operations and procedures contained in the T&R syllabus in preparation for the HAC check.

FL-391 1.5 A(CH-53) N (NS)

Goal. Conduct night HAC review.

Requirement. Continuation of review flight to include night operations and procedures.

FL-392 1.5 H E A(CH-53) (N) (NS)

Goal. Conduct HAC check.

Requirement. Squadrons shall evaluate pilots for HAC designation at the discretion of the commanding officer per the criteria in the CH-53 NATOPS Flight Manual, OPNAVINST 3710.7 and local SOP's. This flight will cover all practicable operations and procedures contained in the T&R syllabus.

FL-393 1.5 H A(2 CH-53) (N) (NS)

Goal. Conduct a section leader check.

Requirement. Satisfy the prerequisites defined in the applicable NATOPS Flight Manual, OPNAVINST 3710.7 and local directives for designation as a section leader. Demonstrate the leadership necessary for effective mission accomplishment. Pilots shall conduct this flight under the standards required in MCO 3501.4, MCCRES, Volume III, Marine Heavy Helicopter squadrons and/or MCO 3501.8 MCCRES, Volume IX, Special Operations. Moreover, pilots may use NWP 3-22.5-CH53 Tactical Manual as a source document for planning.

FL-394 1.5 H A(3+ ACFT) (N) (NS)

Goal. Conduct a division leader check.

Requirement. Satisfy all prerequisites defined in the applicable NATOPS Flight Manual, OPNAVINST 3710.7 and local directives for designation as a division leader. Demonstrate the leadership necessary for effective mission accomplishment with a flight of three or more aircraft. Pilots shall conduct this flight under the standards required in MCO 3501.4, MCCRES, Volume III, Marine Heavy Helicopter squadrons and/or MCO 3501.8 MCCRES, Volume IX, Special Operations. Moreover, pilots may use the NWP 3-22.5-CH53 Tactical Manual as a source document for planning.

444. FULL-COMBAT QUALIFICATION PHASE

1. Helicopter Insertion & Extraction Techniques (HIE)

a. Purpose. Introduce insertion and extraction methods required in executing special operations.

b. General. The pilots shall conduct a brief with the supported unit.

c. Crew Requirement. P/P/CC/AO.

d. Prerequisites

(1) Aircrew shall be NSQ HLL or NSQ LLL as required for ambient light conditions and designated NVG troop transport capable to conduct HIE events with NVGs.

(2) Aircrew shall attend brief with appropriate master; e.g., fast rope, rappel, SPIE, and helocast.

e. Ground Training. Aerial delivery, fast rope, rappel, SPIE rig, and helocast training lecture from MAWTS-1 Academic Support Package, as appropriate.

f. Flight Training. (3 Flights, 4.5 Hours).

HIE-400 1.5 T,C,R,H A(CH-53) (N) (NS)

Goal. Introduce procedures for tactical insertion and/or extraction of a ground force via fast rope, rappelling, or SPIE.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Safety precautions.

(c) Signals.

(d) Training master procedures.

(e) Obstacle clearance.

(f) Precision hover/hover performance.

(g) Emergency procedures.

(2) Introduce. Techniques for inserting personnel by fast rope, rappelling, or SPIE rig.

HIE-401 1.5 T,C,R,H A(CH-53)

Goal. Introduce procedures for tactical insertion of a ground force via helocast.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Safety precautions.

(c) Training master procedures.

(d) Obstacle clearance.

(e) Precision hover.

(f) Emergency procedures to include NVG emergencies.

(2) Introduce. Techniques for inserting personnel by helocast.

HIE-402 1.5 T,C,R,H A(CH-53) (N) (NS)

Goal. Introduce procedures for tactical insertion via para ops.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Safety precautions.

(c) Night signals.

(d) Training master procedures.

(e) Obstacle clearance.

(f) Emergency procedures to include NVG emergencies.

(2) Introduce. Techniques for inserting personnel by para ops.

2. Defensive Measures (DM)

a. Purpose. Develop proficiency in evading enemy surface and air threats incorporating ASE in a low-to-medium threat environment. Upon completion of this stage, the pilot will be able to effectively maneuver to evade, in a multi-plane flight, low altitude surface-to-air and air-to-air threats.

b. General. Pilots shall conduct this stage against both electromagnetic and IR threats. The utilization of an EW range with threat systems to include electromagnetic and ground based threat simulation; e.g., smokey SAMs, hand-held pyrotechnics, etc., will greatly enhance aircrew training. The use of an APR-39 trainer or WST simulator will prepare aircrew prior to flight. DM-350, DM-450 and DM-451 require a DM instructor for initial qualification and requalification. Pilots undergoing this stage of instruction must be current and proficient in TERF-232. Continued training is not contingent upon completion of SDM-250. However, pilots should use threat simulators in conjunction with classroom instruction.

c. Crew Requirement. P/P/CC/AO.

d. Ground Training

(1) Pilots shall complete the MAWTS-1 academic syllabus for DM, as specified in the MAWTS-1 Course Catalog, prior to commencing the flight phase.

(2) Review applicable chapters of NWP 3-22.5-CH53 Tactical Manual Vol I and II for EW/IR countermeasures, ASE, and tactical formation maneuvering. Consult the MCM 3-1 for threat systems information.

e. Flight Training. (2 Flights, 2.0 Hours)

DM-450 1.0 T,C,R,H A(2 CH-53 vs 1 R/W Aggressor)

Goal. Introduce section defensive measures against a helicopter aggressor.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Lookout doctrine.

(c) Situational awareness.

(d) Adversary aircraft parameters.

(e) Adversary weapons envelopes.

(f) Mutual support.

(g) Tactical turns.

(2) Introduce. Tactical turns per NWP 3-22.5-CH53 Tactical Manual in response to a threat helicopter. The MAWTS-1 DM guide contains the defensive measures sequences.

External Syllabus Support. One helicopter to serve as the adversary aircraft, preferrably an attack helicopter.

Prerequisites. TERF-232 proficient.

Ordnance. 60 flares.

DM-451 1.0 T,C,R,H A(2 CH-53 vs 1 F/W Aggressor)

Goal. Introduce section defensive measures against a fixed-wing aggressor.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Lookout doctrine.

(c) Situational awareness.

(d) Adversary aircraft parameters.

(e) Adversary weapons envelopes.

(f) Mutual support.

(g) Tactical turns.

(2) Introduce. Tactical turns per NWP 3-22.5-CH53 Tactical Manual in response to a threat fixed-wing aircraft. The MAWTS-l DM Guide contains defensive measures sequences.

External Syllabus Support. One fixed wing aircraft to serve as the aggressor.

Prerequisite. TERF-232 proficient.

Ordnance. 60 flares.

3. Nuclear, Biological, and Chemical (NBC)

a. Purpose. Conduct flight operations while wearing NBC protective equipment.

b. General. For the safe execution of initial NBC flights, one pilot and one aircrewman shall remain unmasked.

c. Crew Requirement. P/P/CC.

d. Ground Training

(1) Discuss the wearing of the NBC defense suit, mask, hood, gloves and boots. Introduce proper maintenance and serviceability checks on equipment, emphasizing donning of equipment.

(2) Discuss physiological factors associated with flying with NBC protective equipment.

e. Flight Training. (1 Flight1 1.0 Hour).

NBC-460 1.0 T,C,R,H A(CH-53)

Goal. Introduce flight in a simulated NBC environment.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(c) Distortion of vision.

(d) Proper use of NBC defensive equipment.

(2) Introduce

(a) Taxi, low work, pattern work.

(b) Confined area landings.

4. Tactics (TAC)

a. Purpose. Conduct practical application exercises using skills developed throughout the syllabus. Pilots shall emphasize the integration of Marine aviation assets, threat and threat countertactics, and the C3 system. These exercises will include mission planning, briefing, and execution of an assault support mission in a simulated medium to high threat environment. The total number of aircraft, as specified, may be a dissimilar mix of aviation assets.

b. General. Pilots shall conduct these flights under the standards required in MCO 3501.4, MCCRES, Volume III, Marine Heavy Helicopter Squadrons and/or MCO 3501.8 MCCRES, Volume IX, Special Operations. Pilots should use the NWP 3-22.5-CH53 Tactical Manual as a source document for planning. Pilots may conduct these flights in high or low light level conditions, if the participating pilots have the requisite NSQ designation.

c. Crew Requirement. P/P/CC. AO for NVG flights.

d. Ground Training. Consult the MAWTS-1 Course Catalog for the recommended lectures in the Academic Support Package applicable to this stage of flight.

e. Flight Training. (4 Flights, 10.0 Hours)

TAC-480 2.0 T A(3+ ACFT)

Goal. Develop integrated tactical flight proficiency in a low-to-medium threat environment; use MCCRES standards as a reference for mission planning.

Requirement

(1) Discuss

(a) Objective area analysis.

(b) Threat analysis and countertactics.

(c) Escorts/supporting arms integration.

(d) C3 integration.

(e) ASE control/employment.

(2) Introduce

(a) Discussion items.

(b) Incorporate DASC, HDC, MEZ, and EMCON procedures.

(c) Use escort assets emphasizing responsibilities of the air mission commander, assault flight leader, and escort flight leader.

Prerequisites. TAC-380. SDM-250, if available. Pilots shall reference paragraph 443.4.b.

Ordnance. .50 caliber ammunition and 30 chaff and 30 flares, or as range requirements permits.

TAC-481 2.0 T,C,R,H A(3+ ACFT) N NS

Goal. Develop integrated tactical flight proficiency in an integrated low-to-medium threat environment; use MCCRES standards as a reference for mission planning.

Requirement

(1) Discuss

(a) Objective area analysis.

(b) Threat analysis and countertactics.

(c) Escorts/supporting arms integration.

(d) C3 integration.

(e) ASE control/employment.

(2) Introduce

(a) Discussion items.

(b) Incorporate DASC, HDC, MEZI and EMCON procedures.

(c) Use escort assets emphasizing responsibilities of the air mission commander, transport flight leader, and escort flight leader.

Prerequisites. TAC-380. SDM-250, if available. Pilots shall reference paragraph 443.4.b.

Ordnance. .50 caliber ammunition and 30 chaff and 30 flares, or as range requirements permits.

TAC-482 2.0 T A(2+ ACFT) N NS

Goal. Develop tactical flight proficiency in urban terrain operations at night per the MAWTS-1 MOUT Manual.

Requirement

(1) Discuss

(a) Effects of ambient lighting on night systems in an urban area.

(b) Urban navigation.

(c) Targeting and fire support coordination in an urban area.

Introduce. Discussion items listed above.

Prerequisites. TAC-381. SDM-250, if available.

TAC-483 4.0 T,C,R,H A(3+ ACFT) (N) (NS)

Goal. Utilizing AR and/or TFBDS, execute a long range mission in a low-to-medium threat environment.

Requirement

(1) Discuss

(a) Route planning.

(b) Refueling considerations.

(c) Escort/fire support coordination.

(2) Introduce. Discussion items listed above.

Prerequisites. TAC-380. SDM-2501 if available. Pilots shall reference paragraph 443.4.b.

Ordnance. .50 caliber ammunition and 30 chaff and 30 flares, or as range requirements permits.

450. INSTRUCTOR TRAINING. The 500 and 600 level flights do not affect combat readiness percentage (CRP) points.

1. Day and Night unaided Instructor Training

a. Purpose. Develop qualified instructor pilots for day and night unaided events using a standardized flight training program.

b. General

(1) Fly IUT flights with a designated FRS Instructor Pilot.

(2) Pilots undergoing instructor training should fly in the right seat.

(3) All IUT's should complete every event of the IUT training syllabus.

c. Training Objectives. All IUT flights emphasize instructional techniques, briefing, and debriefing. The IUT will be capable of demonstrating all training objectives listed for the referenced syllabus flight. Emphasis on all flights is on training objectives, method of instruction, and student problem areas. At the completion of this stage of training, the Pilot will be designated an Instructor Pilot and qualified to instruct all day and night unaided Combat Capable events.

d. Crew Requirement. IP/IUT/CC.

e. Flight Training. (7 Flights, 11.0 Hours)

FAM-553 1.5 A(CH-53)

Goal. Introduce the instructor pilot brief and demonstrate standardized procedures for flight planning, preflight, and all day FAM stage maneuvers.

Requirement. IP and IUT will discuss preflight and postflight pilot briefings. IUT will observe preflight, cockpit procedures, techniques of instruction, and local course rules. Instructors shall emphasize the ability to teach, evaluate problems, and apply corrective instruction.

FAM-554 1.5 A(CH-53)N

Goal. Review all familiarization stage maneuvers at night.

Requirement. IUT will perform all night familiarization stage maneuvers with emphasis on the IUT's instructional technique.

INST-555 2.0 A/S(CH-53) (N)

Goal. Review basic instrument, IFR planning, filing, and airway procedures.

Requirement

(1) Discuss

(a) IFR planning.

(b) Filing a DD-175.

(c) Airway procedures.

(d) Precision/non-precision approaches.

(2) Review

(a) Instrument checklist.

(b) Attitude instrument flight.

(c) Standard rate climbing and descending turns.

(d) Recovery from unusual attitudes.

(e) Vertical S-1 pattern.

(f) Oscar pattern.

(3) Conduct. Fly a minimum of one precision and one non-precision approach.

CAL-556 1.5 A(CH-53)

Goal. Review CAL instruction techniques.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Comfort level.

(2) Review. All CAL stage maneuvers.

FORM-557 1.5 A(2CH-53)

Goal. Review formation instructional techniques, formation stage maneuvers and emphasize closure rates and radius of turns.

Requirement. Brief and fly a formation flight introducing all formation maneuvers. Emphasize parade and cruise turns and section CALs.

EXT-558 1.5 A(CH-53)

Goal. Review external operation instructional techniques.

Requirement

(1) Discuss

(a) Aircrew coordination.

(b) Single and dual point operations, as appropriate.

(c) Load computations, preflight and in-flight.

(d) Emergency procedures.

(e) Aircraft limitations.

(2) Review. Single and dual point operations as appropriate.

(3) Conduct. Perform a minimum of three successful hookups and releases.

External Syllabus Support. HST.

STANX-559 1.5 E A(CH-53) (N)

Goal. Flight instructor standardization check.

Requirement. Instructors shall evaluate the IUT in all previously introduced stages of instruction for standardized flight procedures and instrument flight techniques.

2. Night Systems Famialiarization Instructor Training

a. Purpose. Develop qualified instructor pilots for Night Vision Goggle events using a standardized flight training program.

b. General

(1) Fly IUT flights with a designated NSI or MAWTS-1 Instructor.

(2) Pilots undergoing instructor training should fly in the right seat.

(3) All IUT's shall complete every event of the IUT training syllabus.

c. Training Objectives

(1) All IUT flights emphasize instructional techniques, briefing, and debriefing. The IUT will be capable of demonstrating all training objectives listed for the referenced syllabus flight. Emphasis on all flights is on training objectives, method of instruction, and student problem areas. At the completion of this stage of training, the pilot will be designated a Night Systems Familiarization Instructor (NSFI) and qualified to instruct all Night Vision Goggle Combat Capable HLL events.

(2) The MAWTS-1 Course Catalog contains the prerequisites and course training requirements for this stage of training.

d. Crew Requirement. IP/IUT/CC/AO.

e. Flight Training. (4 Flights, 4.0 Hours).

NVG-560 Refer to MAWTS-1 Course Catalog.
NVG-561 Refer to MAWTS-1 Course Catalog.
NVG-562 Refer to MAWTS-1 Course Catalog.
NVG-563 Refer to MAWTS-1 Course Catalog.

3. Aerial Refueling Instructor (AR)

a. Purpose. Develop proficiency in instructional procedures for all phases of aerial refueling.

b. General

(1) Complete flights in numerical order.

(2) ARIs do not require NSI designation.

(3) An ARI is required to certify additional squadron ARIs.

(4) The completion of AR-520 and 521 satisfies the requirements for ARI.

c. Flight Training. (2 Flights, 2.0 Hours).

AR-520 1.0 A(CH-53)

Goal. Demonstrate aerial refueling proficiency and instructional technique in the day environment.

Requirement. Review aerial refueling procedures, emergency procedures, and flight briefing. IUT to brief flight.

AR-521 1.0 A(CH-S3) N NS

Goal. Demonstrate NVG aerial refueling proficiency and instructional technique.

Requirement. Review AR-353 emphasizing use of NVGs.

451. REQUIREMENTS, QUALIFICATIONS, AND DESIGNATIONS (ROD)

1. Purpose. Determine qualification for designation in specific flight skills, systems knowledge, and flight leadership abilities.

2. General. Squadrons should use this phase of training for check flights and designations.

3. Crew Requirement. P/P/CC (AO as required).

4. Flight Training. (5 Flights, 8.0 Hours).

ROD-600 1.5 E A(CH-53) (N) (NS)

Goal. Conduct annual NATOPS evaluation.

Requirement. The proficiency expected by the evaluator in this flight shall be commensurate with the experience level of the pilot under evaluation.

Prerequisite. The open and closed book NATOPS examinations shall be completed prior to the commencement of the checkflight.

ROD-601 1.5 E A/S (CH-53) (N) (NS)

Goal. Conduct annual instrument evaluation.

Requirement. Evaluate all phases of instrument flight to include precision and non-precision approaches, partial panel, and holding. Demonstrate proficiency in handling instrument related emergencies to include unusual attitude recoveries.

Prerequisite. Completion of Instrument Ground School and all instrument requirements per OPNAVINST 3710.7 prior to the commencement of the checkflight.

ROD-602 1.5 E A(2 Div+) (N) (NS)

Goal. Conduct a flight leader check.

Requirement

(1) Brief and lead a multi-division mission, emphasizing flight coordination, flight discipline, inadvertent IMC, rendezvous procedures, and in-flight emergency coordination.

(2) At the completion of flight, perform an inadvertent IMC breakup maneuver in VMC conditions.

(3) Squadrons shall evaluate pilots for designation at the discretion of the commanding officer per the criteria in the CH-53 NATOPS Flight Manual, OPNAVINST 3710.7_, and local SOPS.

(4) Pilots shall conduct this flight under the standards required in MCO 3501.4, MCCRES, Volume III, Marine Heavy Helicopter squadrons and/or MCO 3501.8 MCCRES, Volume IX, Special Operations. Moreover, pilots may use the NWP 3-22.5-CH53 Tactical Manual as a source document for planning.

ROD-603 1.5 E A(2+Div ACFT) (N) (NS)

Goal. Conduct a mission commander check.

Requirement

(1) Mission commander is a function of flight leadership, maturity, and experience. The mission commander should be evaluated on his ability to integrate the six functions of Marine aviation. The mission commander should lead the mission from a C&C aircraft, if available.

(2) Pilots shall conduct this flight under the standards required in MCO 3501.4, MCCRES, Volume III, Marine Heavy Helicopter squadrons and/or MCO 3501.8 MCCRES, Volume IX, Special Operations. Moreover, pilots may use NWP 3-22.5-CHS3 Tactical Manual as a source document for planning.

ROD-604 2.0 E A(CH-53)

Goal. Conduct a functional check pilot evaluation.

Requirement. Squadrons shall evaluate pilots for designation at the discretion of the commanding officer per the criteria in the CH-53 NATOPS Flight Manual, OPNAVINST 3710.7_, and local SOP's. Squadrons shall base this evaluation after completion of a locally prepared syllabus.

452. GRADUATE LEVEL COURSES

1. There are five graduate level courses that qualify instructors for specific portions of the T&R syllabus. These courses are as follows:

a. Weapons and Tactics Instructor (WTI)

b. Terrain Flight Instructor (TERFI)

c. Night Systems Familiarization Instructor (NSFI)

d. Night Systems Instructor (NSI)

e. Defensive Measures Instructor (DMI).

2. The MAWTS-1 Course Catalog contains the above courses and the appropriate training codes. The community considers each particular stage of the T&R syllabus sufficient to maintain proficiency as a instructor.

460. ORDNANCE REQUIREMENTS. Annual ordnance requirements are developed on a "per crew" basis per OPNAVNOTE 8010.

ORDNANCE	100 SERIES	200 SERIES	300 SERIES	400 SERIES	REFRESHER	IUT	ANNUAL*
Chaff	0	0	90	90	90	0	60
Flares	0	0	90	210	210	0	60
.50 CAL	See crewchief syllabus, Chapter 5, Volume 3 for numbers.						

* Annual Ordnance requirements maintain aircrew proficiency.

AIRCRAFT: CH-53 MOS: 7564/7566 CREW POSITION: PILOT

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	T	C	R	H	REMARKS
COMBAT CAPABLE PHASE									
SFAM	100	1.0	*	0.2	X	X	X	X	S
	101	1.0	*	0.2	X	X		X	S
	102	1.0	*	0.2	X		X		S
	103	1.0	*	0.2	X				S
	104	1.0	*	0.2	X	X	X	X	S ACT
	105	1.5	12	0.2	X	X	X	X	S ACT
	106	1.0	12	0.2	X	X	X	X	S ACT
	107	1.0	*	0.2	X				S
FAM	110	1.5	*	1.0	X	X		X	A
	111	1.5	*	1.0	X	X			A
	112	1.5	*	1.0	X	X			A
	113	1.5	*	1.0	X				A
	114	1.5	*	1.0	X	X	X	X	A
	115	1.5	*	1.0	X				A
	116	1.5	*	1.0	X	X	X	X	A
	117	1.5	*	1.0	X				A
	118	1.5	*	1.0	X	X	X	X	A
	119	1.5	*	1.0	X				A
	120	1.5	*	1.0	X				A N
	121	1.5	*	1.0	X	X	X	X	A N
	122	1.5	*	1.0	X	X			A N NS
	123	1.5	*	1.0	X	X	X	X	A N NS
SINST	130	1.0	*	0.2	X	X	X	X	S ACT
	131	1.0	*	0.2	X	X	X	X	S ACT
	132	1.0	*	0.2	X	X	X	X	S ACT
	133	1.0	*	0.2	X	X	X	X	S ACT
	134	1.0	*	0.2	X	X	X	X	S ACT
INST	135	1.5	*	0.5	X				A/S (N) (NS)
	136	1.5	*	0.5	X	X	X	X	A/S (N) (NS)
	137	1.5	*	1.0	X	X	X	X	A/S (N) (NS)
	138	1.5	*	1.0	X	X			A/S (N) (NS)
NAV	140	2.0	*	1.0	X				A
	141	2.0	*	1.0					A N NS
SFORM	150	1.0	*	0.2	X	X	X	X	S
FORM	151	1.5	*	1.0	X	X	X	X	A 2 A/C
	152	1.5	*	1.0	X				A 2 A/C N NS
SCAL	160	1.0	*	0.2	X				S NS
CAL	161	1.5	*	1.0	X	X	X	X	A
	162	1.5	*	1.0	X				A 2 A/C
	163	2.0	*	1.0	X				A N NS
EXT	170	1.0	*	1.0	X	X		X	A
	171	1.0	*	1.0	X	X		X	A N(NS)
	172	1.5	*	1.0	X	X	X	X	A
	173	1.5	*	1.0	X	X	X	X	A N(NS)

Figure 4-2.--MOS 7564/7566 Refly Interval Combat Readiness Percentage

AIRCRAFT: CH-53 MOS: 7564/7566 CREW POSITION: PILOT

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	T	C	R	H	REMARKS
TERF	180	1.5	*	1.0	X	X	X	X	A
	181	1.5	*	1.0	X				A
REV	190	1.5	*	1.0	X	X	X	X	A
CCX	191	2.0	*	1.0	X	X	X	X	A E
COMBAT READY PHASE									
SFAM/FLIR	200	1.5	12	0.2	X	X			S
FAM/INST	201	1.5	6	0.3	X				A/S (N)
FORM	210	1.5	12	0.5	X	X			A 2 A/C
	211	2.0	6	0.8	X	X			A 2 A/C N NS
CAL	220	1.5	12	0.4	X	X			A
	221	1.5	12	0.4	X	X	X	X	A 2 A/C
	222	1.5	6	0.5	X	X			A N NS
	223	2.0	6	1.0	X	X	X		A 2 A/C N NS
TERF	230	1.5	6	0.4	X	X			A
	231	1.5	6	0.4	X		X		A
	232	1.5	6	0.5	X	X	X	X	A 2 A/C
	233	2.0	6	1.0	X	X			A N NS
	234	2.0	6	1.0	X	X	X	X	A 2 A/C N NS
EXT	240	1.5	12	0.5	X	X	X	X	A
	241	1.5	6	1.0	X	X			A N NS
	242	1.5	6	1.0	X	X	X	X	A N NS
SDM	250	1.5	12	0.2	X	X	X		S (NS)
SAR	260	1.0	12	0.2	X	X	X	X	S (NS)
SCQ	270	1.0	12	0.2	X	X		X	S (NS)
FCLP	271	1.0	12	0.5	X	X		X	A
	272	1.0	12	1.0	X	X		X	A N
	273	1.0	12	1.0	X	X		X	A N NS
TAC	280	2.0	12	1.0	X				A 2 A/C
	281	2.0	12	1.0	X				A 2 A/C N NS
COMBAT QUALIFICATION PHASE									
CAL	320	1.5	6	1.5/1.0	X	X			A N NS
	321	2.0	6	1.5/1.5	X	X	X		A 2 A/C N NS
TERF	330	1.5	6	1.5/1.0	X	X			A N NS
	331	2.0	6	1.5/1.5	X	X	X	X	A 2 A/C N NS

Figure 4-2--MOS 7564/7566 Refly Interval Combat Readiness Percentage (Cont)

AIRCRAFT: CH-53 MOS: 7564/7566 CREW POSITION: PILOT

STAGE	TRNG	FLT CODE	HRS	REFLY INTERVAL	CRP	T	C	R	H	REMARKS
EXT		340	1.5	12	1.5/1.0	X				A
		341	1.5	12	1.5/1.0	X	X			A
		342	1.5	12	1.5/1.5	X	X	X	X	A N NS
		343	2.0	6	1.5/1.5	X	X			A N NS
DM		350	2.0	12	1.5/1.0	X	X	X		A 2 A/C (N) (NS)
AR		360	1.5	6	0.0/1.0	X	X		X	A
		361	1.5	6	0.0/1.0	X	X	X	X	A
		362	1.5	6	0.0/1.5	X	X	X	X	A N NS
CQ		370	1.5	12	1.0/1.0	X	X		X	A
		371	1.5	12	0.5/1.0	X	X		X	A N
		372	1.5	12	1.0/1.0	X	X	X	X	A N NS
TAC		380	2.0	12	2.0/1.0	X				A 2+A/C
		381	2.0	12	2.0/1.5	X				A 2+A/C N NS
FL		390	1.5	*	---/---	X	X			A
		391	1.5	*	---/---	X	X			A N(NS)
		392	1.5	*	---/---	X	X		X	A E (N) (NS)
		393	1.5	*	---/---	X	X		X	A 2 A/C (N) (NS)
		394	1.5	*	---/---	X	X		X	A 3+A/C (N) (NS)
FULL-COMBAT QUALIFICATION PHASE										
HIE		400	1.5	12	0.3	X	X	X	X	A (N) (NS)
		401	1.5	12	0.3	X	X	X	X	A
		402	1.5	12	0.3	X	X	X	X	A (N) (NS)
DM		450	1.0	12	0.5	X	X	X	X	A 2V1 R/W
		451	1.0	12	0.5	X	X	X	X	A 2V1 F/W
NBC		460	1.0	12	0.3	X	X	X	X	A
TAC		480	2.0	12	0.6	X				A 3+A/C
		481	2.0	12	0.7	X	X	X	X	A 3+A/C N NS
		482	2.0	12	0.7	X				A 2+A/C N NS
		483	4.0	12	0.8	X	X	X	X	A 3+A/C(N) (NS)
INSTRUCTOR AND SPECIAL FLIGHT PERFORMANCE REQUIREMENTS										
DAY AND NIGHT UNAIDED INSTRUCTOR UNDER TRAINING										
FAM		553	1.5	*	N/A					A
		554	1.5	*	N/A					A N
INST		555	2.0	*	N/A					A/S (N)
CAL		556	1.5	*	N/A					A
FORM		557	1.5	*	N/A					A 2 A/C

Figure 4-2.--MOS 7564/7566 Refly Interval Combat Readiness Percentage (Cont)

AIRCRAFT: CH-53 MOS: 7564/7566 CREW POSITION: PILOT

STAGE	TRNG	FLT CODE	HRS	REFLY INTERVAL	CRP	T	C	R	H	REMARKS
EXT		558	1.5	*	N/A					A
STANX		559	1.5	*	N/A					A (N)
AERIAL REFUELING INSTRUCTOR UNDER TRAINING										
AR		520	1.0	*	N/A					A
		521	1.0	*	N/A					A N NS
REQUIREMENTS, QUALIFICATIONS, AND DESIGNATIONS										
RQD		600	1.5	12	N/A					A E (N) (NS)
		601	1.5	12	N/A					A/S E (N) (NS)
		602	1.5	*	N/A					A E 2Div+ (N) (NS)
		603	1.5	*	N/A					A E 2Div+ (N) (NS)
		604	2.0	*	N/A					A E

Figure 4-2.--MOS 7564/7566 Refly Interval Combat Readiness Percentage (Cont)

CH-53 PILOT FLIGHT UPDATE CHAINING

STAGE	FLIGHT	FLIGHTS UPDATED
SINST	200	
FAN	201	
FORM	210	
	211	210
CAL	220	
	221	210,220
	222	220
	223	210,211,220,221,222
TERF	230	
	231	230
	232	210,230,231
	233	220,222,230,231
	234	210,211,220,221,222,223,230,231,232,233
EXT	240	220
	241	220,222,240
	242	220,222,240,241
SDM	250	
SAR	260	
SCQ	270	
FCLP	271	
	272	271
	273	271,272
TAC	280	210,220,221,230,231,232
	281	210,211,220,221,222,223,230,231,232,233,234,280
CAL	320	220,222
	321	210,211,220,221,222,223,320
TERF	330	220,222,230,231,233,320
	331	210,211,220,221,222,223,230,231,232,233,234,320,321,330
EXT	340	220,240
	341	220,230,231,240,340
	342	220,222,240,241,242,320,340
	343	220,222,230,231,233,240,241,242,320,330,340,341,342
DM	350	210,230,231,232
AR	360	
	361	360
	362	360,361
CQ	370	271
	371	271,272,370
	372	271,272,273,370,371

Figure 4-3--Pilot Flight Update Chaining

CH-53 PILOT FLIGHT UPDATE CHAINING

STAGE	FLIGHT	FLIGHTS UPDATED
TAC	380	210,220,221,230,231,232,280
	381	210,211,220,221,222,223,230,231,232,233,234,280,281,320, 321,330,331,380
FL	390	Add appropriate training code to NAVFLIR.
	391	Add appropriate training code to NAVFLIR.
	392	Add appropriate training code to NAVFLIR.
	393	Add appropriate training code to NAVFLIR.
	394	Add appropriate training code to NAVFLIR.
HIE	400	
	401	
	402	
DM	450	210,230,231,232
	451	210,230,231,232
NBC	460	220
TAC	480	210,220,221,230,231,232,280,380
	481	210,211,220,221,222,223,230,231,232,233,234,280,281,320, 321,330,331,380,480
	482	210,211,220,221,222,223,230,231,232,233,234,280,281 (If conducted in LLL, include TAC-381 on NAVFLIR)
	483	210,220,221,230,231,232,280,380,480 (Include appropriate AR and TAC event codes, for ambient conditions, on NAVFLIR)

Figure 4-3.--Pilot Flight Update Chaining (Cont)

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AIRCREW TRAINING FORM

REMARKS:

Date of Flight_____ Flight Time_____

Stage/Training Code_____ Landings_____

Instructor_____ Student_____

CHAPTER 5

CH-53 CREW CHIEF/AERIAL GUNNER/OBSERVER

** * N O T E * **

Aircrews shall include aircrew coordination techniques as part of their brief.

CHAPTER 5

CH-53 CREW CHIEF/AERIAL GUNNER/OBSERVER

500. PROGRAM OF INSTRUCTION (P0I) FOR BASIC AND TRANSITION CREW CHIEF

WEEKS	COURSE/PHASE	ACTIVITY
1	CH-53D or CH-53E Familiarization	FREST
2-5	Ground Schools	Training Squadron
6-17	Combat Capable Phase	Training Squadron
	Combat Ready Phase	Tactical Squadron
	Combat Qualification Phase	Tactical Squadron
	Full-Combat Qualification Phase	Tactical Squadron

501. P0I FOR CONVERSION CREW CHIEF

WEEKS	COURSE/PHASE	ACTIVITY
1	CH-53D or CH-53E Familiarization	FREST
2-4	Ground Schools/OJT	Training Squadron
5-15	Combat Capable Phase	Training Squadron
	Combat Ready Phase	Tactical Squadron
	Combat Qualification Phase	Tactical Squadron
	Full-Combat Qualification Phase	Tactical Squadron

502. POI FOR REFRESHER AND SERIES CONVERSION CREW CHIEF

WEEKS	COURSE/PHASE	ACTIVITY
1	CH-53D or CH-53E Familiarization	Tactical Squadron
2-4	Ground Schools/OJT	Tactical Squadron
5-12	Combat Capable Phase	Training Squadron
	Combat Ready Phase	Tactical Squadron
	Combat Qualification Phase	Tactical Squadron
	Full-Combat Qualification Phase	Tactical Squadron

503. POI FOR BASIC, TRANSITION, CONVERSION, REFRESHER AND SERIES CONVERSION AERIAL GUNNER/OBSERVER

WEEKS	COURSE/PHASE	ACTIVITY
1-2	Ground School	Tactical Squadron
3-15	Combat Capable Phase	Tactical Squadron
	Combat Ready Phase	Tactical Squadron
	Combat Qualification Phase	Tactical Squadron
	Full-Combat Qualification Phase	Tactical Squadron

510. GROUND TRAINING COURSES OF INSTRUCTION

COURSE	ACTIVITY
SERE School	Jt Training Course
CH-53D/E Power Plants and Related/Rotors	FREST
Appropriate Aerial Gunnery School	Group/Squadron
Aviation Physiology/Aviation Water Survival	Aviation Physiology Unit

511. AIRCREW TRAINING REFERENCES. Aircrews shall use the following references to ensure safe and standardized training and maintenance procedures, grading criteria, and aircraft operation:

Designator	Title
OPNAVINST 3710.7__	NATOPS General Flight and Operations
NAVAIR 0l-230-HMA-1	CH-53A/D NATOPS Flight Manual
NAVAIR Al-H53BE-NFM-000	CH-53E NATOPS Flight Manual
MCO P3500.14	T&R Manual, Volume 1, Administrative
MCO P4790.12	Individual Training Standards System (MATNEP)
MCO 3501.4	Marine Corps Combat Readiness and Evaluation System
OPNAVINST 4790.2__	Naval Aviation Maintenance Program
	MAWTS-1 Course Catalog
	MAWTS-1 Enlisted Aircrew Academic Support Package
NAVAIR 00-80T-106	LHA/LPH/LHD NATOPS Manual
NWP-42	Shipboard Helicopter Operations Manual

512. SQUADRON LEVEL TRAINING

NATOPS Manual

CH-53 Tac Manual

Publications and Related Directives

Communications Procedures

Fueling and Servicing

Ground Handling

Helicopter Loading/Equipment Storage

Maint Procedures and Troubleshooting

Safety

Survival and First Aid

Aerial Gunnery Training

Aerial Delivery

CH-53 FARP

External Operations

Helicopter Insertion/Extraction Ops.

MAGTF Organization/Equipment

MAGTF: The Amphibious Assault

Map Reading

Night Vision Systems

Night Vision Techniques

Rappel Operations

Rope Suspension Training

Search and Rescue

Shadow Gunnery

Shipboard Operations and Procedures

Terrain Flight Introduction

Terrain Flight Externals

TRAP

Tactical Briefing/Debriefing

AN/ALE-39 Programming (S)

APR-39 Trainer (15E36) (S)

Helo ESM/ECM Equipment (S)

Countering the FW Threat

Counter Surface-to-Air Threats (S)

Countering the RW Threat (S)

Helicopter Defensive Measures

NBC Threat(S)

Recognition Training

Soviet model IADS

Tactical Formation Maneuvering

Tactical Aircrew Coordination Considerations

520. FLIGHT TRAINING FOR BASIC AND TRANSITION CREW CHIEF

1. Combat Capable Phase

STAGE	No. FLIGHTS	No. HOURS	CRP PERCENT
Familiarization	8	12.0	26.0
Internal Loads	3	4.5	6.0
Formation	2	3.0	4.0
Confined Area Landings	3	4.5	6.0
External Loads	4	5.0	12.0
Terrain Flight	1	1.5	4.0
Combat Capable Check	1	1.5	2.0
TOTAL FOR PHASE	22	32.0	60.0
ACCUMULATION FOR BASIC/TRANSITION P0I	22	32.0	60.0

2. Combat Ready Phase

STAGE	No. FLIGHTS	No. HOURS	CRP PERCENT
Internal Loads	2	2.0	1.0
Formation	2	3.5	1.5
Confined Area Landings	4	6.5	3.0
Terrain Flight	4	7.0	3.0
External Loads	2	3.0	1.5
Field Carrier Landing Practice	3	3.0	2.0
Tactics	2	4.0	2.0
Air-to-Ground	2	3.0	1.0
TOTAL FOR PHASE	21	32.0	15.0
ACCUMULATION FOR BASIC/TRANSITION P0I	43	64.0	75.0

3. Combat Qualification Phase

STAGE	No. FLIGHTS	No. HOURS	CRP PERCENT
Confined Area Landings	2	3.5	3.5
Terrain Flight	2	4.0	3.5
External Loads	3	4.5	4.0
Defensive Measures	1	2.0	1.0
Carrier Qualification	3	4.5	3.0
Tactics	2	4.0	3.0
Air-to-Ground Gunnery and Qualification	2	2.0	2.0
TOTAL FOR PHASE	15	24.5	20.0
ACCUMULATION FOR BASIC/TRANSITION P0I	58	88.5	95.0

4. Full-Combat Qualification Phase

STAGE	No. FLIGHTS	No. HOURS	CRP PERCENT 53E/53D
Helicopter Insert/Extract Techniques	3	4.5	1.5/1.5
Internal Loads	1	2.0	0.5/0.0
Defensive Measures	2	1.0	1.0/1.0
Nuclear, Biological, and Chemical	1	1.0	0.5/0.5
Tactics	2	4.0	1.0/1.5
Moving Target Gunnery	1	1.5	0.5/0.5
TOTAL FOR PHASE	10	14.0	5.0/5.0
TOTAL FOR BASIC/TRANSITION CREW CHIEF	68	102.5	100.0

521. FLIGHT TRAINING FOR CONVERSION CREW CHIEF

1. Combat Capable Phase

STAGE	No. FLIGHTS	No. HOURS
Familiarization	3	4.5
Internal Loads	1	1.5
Confined Area Landings	2	3.0
External Loads	4	5.0
Combat Capable Check	1	1.5
TOTAL FOR PHASE	11	15.5
ACCUMULATION FOR CONVERSION P0I	11	15.5

2. Combat Ready Phase

STAGE	No. FLIGHTS	No. HOURS
Internal Loads	2	2.0
Formation	2	3.5
Confined Area Landings	2	3.5
Terrain Flight	2	3.5
External Loads	2	3.0
Field Carrier Landing Practice	1	1.0
Tactics	1	2.0
Air-to-Ground	2	3.0
TOTAL FOR PHASE	14	21.5
ACCUMULATION FOR CONVERSION P0I	25	37.0

3. Combat Qualification Phase

STAGE	No. FLIGHTS	No. HOURS
Confined Landings	2	3.5
Terrain Flight	2	4.0
External Loads	3	4.5
Defensive Measures	1	2.0
Carrier Qualification	3	4.5
Tactics	1	2.0
Air-to-Ground Gunnery and Qualification	2	2.0
TOTAL FOR PHASE	14	22.5
ACCUMULATION FOR CONVERSION P0I	39	59.5

4. Full-Combat Qualification Phase

STAGE	No. FLIGHTS	No. HOURS
Helicopter Insertion/Extraction Techniques	3	4.5
Internal Loads	1	2.0
Defensive Measures	2	1.0
Tactics	1	2.0
Moving Target Gunnery	1	1.5
TOTAL FOR PHASE	8	11.0
TOTAL FOR CONVERSION P0I	47	70.5

522. FLIGHT TRAINING FOR RERESHER CREW CHIEF

1. COMBAT CAPABLE PHASE

STAGE	No. FLIGHTS	No. FLIGHTS
Familiarization	3	4.5
Internal Loads	1	1.5
Confined Area Landings	2	3.0
External Loads	4	5.0
Combat Capable Check	1	1.5
TOTAL FOR PHASE	11	15.5
ACCUMULATION FOR REFRESHER POI	11	15.5

2. Combat Ready Phase

	No FLIGHTS	No. FLIGHTS
Internal Loads	2	2.0
Formation	2	3.5
Confined Area Landings	4	6.5
Terrain Flight	4	7.0
External Loads	2	3.0
Field Carrier Landing Practice	3	3.0
Tactics	2	4.0
Air-to-Ground	2	3.0
TOTAL FOR PHASE	21	32.0
ACCUMULATION FOR REFRESHER POI	32	47.5

3. Combat Qualification Phase

Stage	No FLIGHTS	No HOURS
Confined Area Landings	2	3.5
Terrain Flight	2	4.0
External Loads	3	4.5
Defensive Measures	1	2.0
Carrier Qualification	3	4.5
Tactics	2	4.0
Air-to-Ground Gunnery Qualification	2	2.0
TOTAL FOR PHASE	15	24.5
ACCUMULATION FOR REFRESHER POI	47	72.0

4. Full-Combat Qualification Phase

STAGE	No. FLIGHTS	No. HOURS
Helicopter Insert/Extract Techniques	3	4.5
Internal Loads	1	2.0
Defensive Measures	2	1.0
Nuclear, Biological, Chemical	1	1.0
Tactics	2	4.0
Moving Target Gunnery	1	1.5
TOTAL FOR PHASE	10	14.0
TOTAL FOR REFRESHER POI	57	86.0

523. FLIGHT TRAINING FOR SERIES CONVERSION CREW CHIEF

1. Combat Capable Phase

STAGE	No. FLIGHTS	No. HOURS
Familiarization	1	1.5
Internal Loads	1	1.5
Confined Area Landings	2	3.0
External Loads	4	5.0
Combat Capable Check	1	1.5
TOTAL FOR PHASE	9	12.5
ACCUMULATION FOR SERIES CONVERSION P0I	9	12.5

2. Combat Ready Phase

STAGE	No. FLIGHTS	No. HOURS
Confined Area Landings	2	3.5
Terrain Flight	2	3.5
External Loads	2	3.0
TOTAL FOR PHASE	6	10.0
ACCUMULATION FOR SERIES CONVERSION P0I	15	22.5

3. Combat Qualification Phase

STAGE	No. FLIGHTS	No. HOURS
Confined Area Landings	1	2.0
Terrain Flight	1	2.0
External Loads	3	4.5
TOTAL FOR PHASE	5	8.5
ACCUMULATION FOR SERIES CONVERSION P0I	20	31.0

4. Full-Combat Qualification Phase

STAGE	No. FLIGHTS	No. HOURS
Helicopter Insert/Extract Techniques	3	4.5
Internal Loads	1	2.0
Tactics	1	2.0
TOTAL FOR PHASE	5	8.5
TOTAL FOR SERIES CONVERSION P0I	25	39.5

524. FLIGHT TRAINING FOR CREW CHIEF INSTRUCTOR TRAINING

	No. FLIGHTS	No. HOURS
Formation	2	2.0
Confined Area Landings	2	2.0
Terrain Flight	1	1.0
Externals	2	2.0
IUT Standardization Checkride	1	1.0
TOTAL	8	8.0

525. FLIGHT TRAINING FOR BASIC AND TRANSITION AERIAL GUNNER/OBSERVER

1. Combat Capable Phase

STAGE	No. FLIGHTS	No. HOURS	CRP PERCENT
Familiarization	3	4.5	15.0
Format ion	2	3.0	10.
Confined Area Landings	2	3.0	10.0
External Loads	4	5.0	18.0
Terrain Flight	1	1.5	5.0
Combat Capable Check	1	1.5	2.0
TOTAL FOR PHASE	13	18.5	60.0
ACCUMULATION FOR BASIC/TRANSITION P0I	13	18.5	60.0

2. Combat Ready Phase

STAGE	No. FLIGHTS	No. HOURS	CRP PERCENT
Formation	2	3.5	1.0
Confined Area Landings	3	5.0	3.0
Terrain Flight	4	7.0	4.0
External Loads	2	3.0	2.0
Field Carrier Landing Practice	2	2.0	1.0
Tactics	2	4.0	2.0
Air-to-Ground	2	3.0	2.0
TOTAL FOR PHASE	17	27.5	15.0
ACCUMULATION FOR BASIC/TRANSITION P0I	30	46.0	75.0

3. Combat Qualification Phase

STAGE	No. FLIGHTS	No. HOURS	CRP PERCENT
Confined Area Landings	2	3.5	3.5
Terrain Flight	2	4.0	3.5
External Loads	3	4.5	4.0
Defensive Measures	1	2.0	1.0
Carrier Qualification	2	3.0	2.0
Tactics	2	4.0	3.0
Air-to-Ground Gunnery and Qualification	2	2.0	3.0
TOTAL FOR PHASE	14	23.0	20.0
ACCUUULATION FOR BASIC/TRANSITION P0I	44	69.0	95.0

4. Full-Combat Qualification Phase

STAGE	No. FLIGHTS	No. HOURS	CRP PERCENT
Helicopter Insert/Extract Techniques	3	4.5	1.0
Defensive Maneuvers	2	1.0	1.0
Nuclear, Biological, and Chemical	1	1.0	0.5
Tactics	2	4.0	2.0
Moving Target Gunnery	1	1.5	0.5
TOTAL FOR PHASE	9	12.0	5.0
TOTAL FOR BASIC/TRANSITION P0I	53	81.0	100.0

526. FLIGHT TRAINING FOR CONVERSION AERIAL GUNNER/OBSERVER

1. Combat Capable Phase

STAGE	No. FLIGHTS	No. HOURS
Familiarization	2	3.0
Confined Area Landings	1	1.5
External Loads	4	5.0
Combat Capable Check	1	1.5
TOTAL FOR PHASE	8	11.0
ACCUMULATION FOR CONVERSION P0I	8	11.0

2. Combat Ready Phase

STAGE	No. FLIGHTS	No. HOURS
Formation	2	3.5
Confined Area Landings	2	3.5
Terrain Flight	2	3.5
External Loads	2	3.0
Field Carrier Landing Practice	1	1.0
Tactics	1	2.0
Air-to-Ground	2	3.0
TOTAL FOR PHASE	12	19.5
ACCUMULATION FOR CONVERSION P0I	20	30.5

3. Combat Qualification Phase

STAGE	No. FLIGHTS	No. HOURS
Confined Area Landings	2	3.5
Terrain Flight	2	4.0
External Loads	3	4.5
Defensive Measures	1	2.0
Carrier Qualification	2	3.0
Tactics	1	2.0
Air-to-Ground Gunnery and Qualification	2	2.0
TOTAL FOR PHASE	13	21.0
ACCUMULATION FOR CONVERSION P0I	33	51.5

4. Full-Combat Qualification Phase

STAGE	No. FLIGHTS	No. HOURS
Helicopter Insert/Extract Techniques	3	4.5
Defensive Measures	2	1.0
Tactics	1	2.0
Moving Target Gunnery	1	1.5
TOTAL FOR PHASE	7	9.0
TOTAL FOR CONVERSION P0I	40	60.5

527. FLIGHT TRAINING FOR REFRESHER AERIAL GUNNER/OBSERVER

1. Combat Capable Phase

STAGE	No. FLIGHTS	No. HOURS
Familiarization	2	3.0
Confined Area Landings	1	1.5
External Loads	2	3.5
Combat Capable Check	1	1.5
TOTAL FOR PHASE	6	9.5
ACCUMULATION FOR REFRESHER P0I	6	9.5

2. Combat Ready Phase

STAGE	No. FLIGHTS	No. HOURS
Formation	2	3.5
Confined Area Landings	3	5.0
Terrain Flight	4	7.0
External Loads	2	3.0
Field Carrier Landing Practice	2	2.0
Tactics	2	4.0
Air-to-Ground	2	3.0
TOTAL FOR PHASE	17	27.5
ACCUMULATION FOR REFRESHER P0I	23	36.0

3. Combat Qualification Phase

STAGE	No. FLIGHTS	No. HOURS
Confined Area Landings	2	3.5
Terrain Flight	2	4.0
External Loads	3	4.5
Defensive Measures	1	2.0
Carrier Qualification	2	3.0
Tactics	2	4.0
Air-to-Ground Gunnery and Qualification	2	2.0
TOTAL FOR PHASE	14	23.0
ACTION FOR REFRESHER P0I	37	59.0

4. Full-Combat Qualification Phase

STAGE	No. FLIGHTS	No. HOURS
Helicopter Insert/Extract Techniques	3	4.5
Defensive Measures	2	1.0
Nuclear, Biological, and Chemical	1	1.0
Tactics	2	4.0
Moving Target Gunnery	1	1.5
TOTAL FOR PHASE	9	12.0
TOTAL FOR REFRESHER P0I	46	71.0

528. FLIGHT TRAINING FOR SERIES CONVERSION AERIAL GUNNER/OBSERVER

1. Combat Capable Phase

STAGE	No. FLIGHTS	No. HOURS
Familiarization	1	1.5
Confined Area Landings	2	3.0
External Loads	4	5.0
Combat Capable Check	1	1.5
TOTAL FOR PHASE	8	11.0
ACCUMULATION FOR SERIES CONVERSION P0I	8	11.0

2. Combat Ready Phase

STAGE	No. FLIGHTS	No. HOURS
Confined Area Landings	2	3.5
Terrain Flight	2	3.5
External Loads	2	3.0
TOTAL FOR PHASE	6	10.0
ACCUMULATION FOR SERIES CONVERSION P0I	14	21.0

3. Combat Qualification Phase

STAGE	No. FLIGHTS	No. HOURS
Confined Area Landings	1	2.0
Terrain Flight	1	2.0
External Loads	3	4.5
TOTAL FOR PHASE	5	8.5
ACCUMULATION FOR SERIES CONVERSION P0I	19	29.5

4. Full-Combat Qualification Phase

STAGE	No. FLIGHTS	No. HOURS
Helicopter Insert/Extract Techniques	3	4.5
Tactics	1	2.0
TOTAL FOR PHASE	4	6.5
TOTAL FOR SERIES CONVERSION P0I	23	36.0

529. REQUIREMENTS, QUALIFICATIONS AND DESIGNATIONS

STAGE	FLIGHTS	HOURS
Annual NATOPS Evaluation	1	1.5
TOTAL	1	1.5

530. EVENT TRAINING

1. Although a current simulator does not exist, a request for an Aerial Gunner simulator is in the process of being developed.

2. The aircraft is used for those events designated with an "A" and the flight simulator is used for those events designated with an "S." To give commanding officers the maximum amount of flexibility for training some events allow for the optional use of simulators or aircraft. Those events will use "A/S" for aircraft preferred, simulator optional and "S/A" for simulator preferred, aircraft optional.

540. FLIGHT PERFORMANCE REQUIREMENTS

1. Purpose. The aircrew member will become familiar with aircraft limitations, operating and emergency procedures and demonstrate a knowledge of the NATOPS manual, the ability to use all maintenance publications and safety regulations pertinent to flight operations and maintenance procedures.

2. General

a. This manual generalizes mission guidance to allow for varying local conditions and allow this manual to remain unclassified. CMC (A) and CG MCCDC encourages squadrons to use the full range of tactics in the tactical manuals and adopt the latest developed and proven tactics.

b. This manual designs the combat capable training phase for an instructor and trainee to maximize training and to minimize syllabus support hours.

c. All events shall terminate with a comprehensive debrief with emphasis on the aircrew's performance using all evaluation techniques.

d. Aircrew shall fly events annotated with an "N" at least 30 minutes after official sunset. Aircrew may fly events annotated with "(N)" at night.

e. Aircrew shall fly events annotated with an "NS" with Night Vision Goggles for the entire flight. Aircrew may fly events annotated with "(NS)" using NVGs.

f. Crew Chief Under Instruction (CCUI) shall complete the appropriate FREST ground school instruction prior to commencement of flight training.

3. Syllabus Assignment. Basic crew chiefs (CC) and aerial gunner/observers (AGIO) will be assigned to fly the entire syllabus. Transition crewchiefs and aerial gunners/observers shall fly the basic syllabus. Conversion, refresher, and series conversion (i.e. 53E to 53D) crew chiefs and aerial gunner/observers will fly those events designated by a "C", "R", or "S" respectively in the flight description (CC center of page and AGIO to the right). Aerial gunner/observers converting to secondary MOS crew chief shall complete those events designated by an "0." The squadron training officer shall enter all Aircrew Training Forms in section 3 of the APR for all flights designated by "C," "R," "0" in the flight description. These Aircrew Training Forms will replace Aircrew Training Forms previously entered in section 3. Figures 5-1/5-2 shows refly interval and combat readiness percentage.

4. Prior Qualification. Previously qualified H-53 crew chiefs and aerial gunner/observers returning from non-flying tour will fly the appropriate Refresher P0I.

5. Aircrew Training Events

a. All crew chiefs and aerial gunners/observers shall have an evaluation form filled out upon completion of the following:

(1) Combat Capable Check (CCX-191). A designated Crew Chief Instructor (CCI) shall evaluate the CCX-191. This even is considered the Initial NATOPS evaluation.

(2) Annual NATOPS Check (RQD-604. A designated NATOPS instructor/ assistant shall evaluate RQD-604.

(3) Any initial flight not requiring an instructor. A Crew Chief who is proficient in that sortie shall evaluate and complete an Aircrew Training Form.

(4) Any sortie that requires an NSI, AGI, TERFI or DMI.

b. If the commanding officer has waived an syllabus sortie, the squadron training officer shall place a waiver letter in section 3 of the APR.

c. All ATF's shall annotate the appropriate crew position under instruction.

6. Aircrew Coordination. Aircrew shall brief techniques and aspects of aircrew coordination for all flights and/or events. The crew chief will always being alert for other aircraft or obstacles to flight. He will supervise internal loading at the direction of the pilot, verbally direct the pilot during external hookups and releases, and supervise the embarkation and debarkation of passengers. The crew chief may detect system failures before the pilot and must inform him of potential malfunctions. He can affect minor airborne repairs and supervise any additional crew members that the mission may require.

541. COMBAT CAPABLE PHASE

1. Familiarization (FAM)

a. Purpose. Familiarize the aircrew with H-53 operations and procedures.

b. General

(1) Aircrew may fly these flights in conjunction with the pilot syllabus. The aircrewman should complete all familiarization stage flights prior to flying an subsequent flights.

(2) Instructors shall be CCI or CCNSI for FAM-122.

c. Crew Requirement. CCI/CCUI OR CCI/AOUI. AOUL flies FAM-110, FAM-120.

d. Prerequisite. Aircrew must complete their physical, NAVAL aviation Water Survival Training Program (NAWSTP), Naval Aviation Physiology Training Program (NAPTP) prior to FAM-110.

e. Ground Training

(1) Publications and related directies

(2) Safety

(3) Ground handling

(4) Aircrew Coordination Training

(5) Night Imaging and Threat Evaluation (NITE) Lab Instruction.

(6) Fueling and servicing

(7) Helicopter loading and equipment storage

(8) Maintenance procedures and troubleshooting

f. Flight Training. (8 Flights, 12.0 Hours)

FAM-110	1.5	A(CH-53)	C,R,S

Goal. Introduce H-53 aircrewman duties.

Requirement

(1) Discuss ramp operation.

(2) Discuss single, dual, and total engine failures on takeoff and landing, emergency water operation, floatation equipment and inflation procedures, ditching/abandoning aircraft, and search and rescue scanning and sighting techniques, vibrations, and landing gear system failure.

(3) Introduce blade and plyon fold procedures, systems troubleshooting, if equipped utility hoist operation, and system function checks.

(4) Practice preflight, starting, taxi directions, lookout doctrine, servicing, postflight, and turnaround procedures.

(5) CCUI act in the capacity of crew chief under the supervision of a crew chief instructor.

FAM-112 1.5 A(CH-53)

Goal. CCUI practices H053 crew chief duties.

Requirement

(1) Review emergency procedures for engine fire in-flight fuselage fire, electrical fire, engine post shutdown fire, smoke and fume elimination.

(2) Review preflight, starting, taxi directions, lookout doctrine, servicing, postflight, turnaround, and emergency egress procedures.

(3) CCUI will perform the duties of a crew chief under the supervision of a crew chief instructor.

FAM-113 1.5 C, R, S A(CH-53)

Goal. CCUI reviews H-53 crew chief duties.

Requirement
(1) Review emergency procedures and duties of the crew chief.

(2) CCUI will perform the duties of a crew chief under the supervision of a crew chief instructor.

FAM-119 1.5 A(CH-53) (N)

Goal. Progress review.

Requirement

(1) Discuss bird strike.

(2) CCUI will perform the duties of the crew chief.

FAM-120 1.5 A(CH-53) N

Goal. Introduce aircrewman duties during night operation in the H-53.

Requirement

(1) Discuss H-53 lighting systems, night vision techniques as contained in NWP 55-9-CH53 TAC Manual, and airfield lighting.

(2) Demonstrate use of cargo tie down lights, cargo loading lights, emergency exit lights, and cabin lighting.

(3) Introduce night preflight, starting, taxi, lookout, shutdown, and postflight proecdures.

(4) The CCUI will observe and assist the crew chief instructor as required.

Prerequisite. FAM-110, FAM-111, FAM-112, AND FAM-113.

FAM-121 1.5 C,R A(CH-53) N

Goal. CCUI review crew chief duties at night.

Requirement

(1) Discuss cabin heater function and chill factor.

(2) Review night preflight, starting, taxi, lookout, shutdown, and postflight.

(3) CCUI will perform the duties of a crew chief under the supervision of a crew chief instructor.

FAM-122 1.5 C, R A(CH-53) N NS C,R

Goal. Introduce the aircrewman to NVG operations.

Requirement

(1) Discuss NVGs and aircrew coordination as contained in NWP 3-22.5-CH53 Tactical Manual.

(2) Demonstrate the use of NVG compatible cockpits and/or blue light kit systems.

(3) Introduce NVGs, ground relationship, and obstacle clearance while wearing NVGs at an outlying airfield with .0022 LUX or greater illumination.

(4) Establish minimum crew comfort levels and review safety precautions.

Prerequisite

(1) Instructor shall be a designated CCI or CCNSI.

(2) Aircrew shall complete the Night Imaging and Threat Evaluation (NITE) Lab and the Enlisted Aircrew Night Vision Training Course from the MAWTS-1 Enlisted Aircrew Academic Support Package prior to conducting this flight.

2. Internal Loads (INT)

a. Purpose. Introduce crew chief duties in loading, securing, unloading passengers, cargo and vehicles.

b. General

(1) Aircrew may fly these flights in conjunction with any stage of the pilot syllabus.

(2) Instructor shall be a CCI or CCNSI if NVGs are used.

c. Crew Requirement. CCI/CCUI.

d. Ground Training. Appropriate sections of the A1-H53BE-GLG-000 (Cargo Loading Manual), NATOPS Flight Manual, and helicopter loading and equipment storage.

e. Flight Training. (3 Flights, 4.5 Hours)

INT-135 1.5 O, C, RS A(CH-53)

Goal. Introduce crew chief duties during flights carrying internal cargo and/or vehicles.

Requirement

(1) Discuss safety regulations for loading and unloading cargo and vehicles.

(2) Demonstrate the use of the cargo winch.

(3) Demonstrate cargo and vehicle loading, tiedown, and unloading procedures per NATOPS.

(4) Review ramp operation.

(5) CCUI will observe and assist the crew chief instructor as required.

INT-136 1.5 O A(CH-53)

Goal. Review crew chief duties during flights carrying internal cargo and/or vehicles.

Requirement

(1) Introduce the use of the cargo winch.

(2) Introduce cargo and/or vehicle loading, tiedown, and unloading procedures.

(3) CCUI will perform the duties of a crew chief under the supervision of a crew chief instructor.

INT-137 1.5 0 A(CH-53) (N) (NS)

Goal. Introduce crew chief duties during passenger operations.

Requirement

(1) Discuss safety regulations and the required flight/safety equipment for passengers, combat troops and litter patients over land and water. Discuss MEDEVAC mission categories.

(2) Demonstrate the Visual Aural Debark System. (CH-53D only)

(3) Introduce passenger briefing, embarking, securing and debarking procedures. Introduce proper litter attachment and securing.

(4) Review emergency passenger egress, abandon and ditching aircraft procedures.

(5) CCUI will perform the duties of a crew chief under the supervision of a crew chief instructor.

(6) If NVGs are used the instructor shall be a CCI or CCNSI.

3. Formation (FORM)

a. Purpose. Familiarize the aircrew with responsibilities during formation flight with emphasis on aircrew coordination.

b. General

(1) Aircrew may fly this stage in conjunction with the formation stage of the pilot syllabus.

(2) Instructor shall be a CCI or CCNSI for FORM-153.

c. Crew Requirement. CCI/CCUI or CCI/AOUI.

d. Flight Training. (2 Flights, 3.0 Hours)

FORM-152 1.5 A(2CH-53)

Goal. Introduce aircrewman responsibilities during formation flight.

Requirement

(1) Discuss parade position and formations, closure rate, and hand and arm signals.

(2) CCUI will observe and assist the crew chief instructor for the first .5 hours of flight, then perform the duties of the crew chief for the remainder of the flight under the supervision of a crew chief instructor.

FORM-153 1.5 A(2 CH-53) N NS

Goal. Introduce aircrewman responsibilities during night formation flight.

Requirement

(1) Discuss closure rate, aircraft lighting, light signals, lookout responsibilities, and target fixation.

(2) Stress aircrewman responsibilities during formation flying at night.

(3) CCUI will observe and assist the crew chief instructor for the first 0.5 hours of the flight, then perform the duties of the crew chief for the remainder of the flight under the supervision of the crew chief instructor.

(4) Instructor shall be a CCI or CCNSI.

Prerequisite. FAM-122.

5. Confined Area Landings (CAL)

a. Purpose. Introduce the aircrew to duties when landing in confined areas.

b. General

(1) Aircrew may fly this stage in conjunction with the CAL stage in the pilot syllabus.

(2) Instructor shall be a CCI or CCNSI for CAL-163.

c. Crew Requirement. CCI/CCUI or CCI/AOUI. AOUI flies CAL-161 and CAL-163.

d. Ground Training.

Survival and First Aid.

(1) Communications Procedures.

e. Flight Training. (3 Flights, 4.5 Hours).

CAL-161 1.5 A(CH-53) S

Goal. Introduce aircrewman responsibilities during CALs.

Requirement

(1) Discuss confined area landings and aircrew coordination.

(2) Introduce lookout doctrine, aircrew coordination, main rotor, tail rotor, and aircraft fuselage clearances required during confined area landings. Emphasize obstacle clearance during the approach, landing, and takeoff, suitability of the LZ terrain, and drift correction calls to the pilot prior to the aircraft touchdown.

CAL 162 1.5 O, C, R, S A(CH-53)

Goal. Review crew chief responsibilities during CALs.

Requirement

(1) Review items introduced on CAL-161.

(2) Discuss landing gear system failures, vibrations, and Engine failures in flights

(3) CCUI will perform the duties of a the crew chief under the Supervision of a crew chief instructor.

(4) Maintain aircraft clearance and proper lookout doctrine.

CAL-163 1.5 O, C, R, S A(CH-53) N NS C,R,S

Goal. Introduce aircrewman responsibilities during confined Area landings at night utilizing NVGs.

Requirement

(1) Discuss night adaptation, protection of night vision, Helicopter preparation, LZ lighting, and GAIL lights as Contained in NWP 3-22.5-CH53 Tactical Manual.

(2) Stress lookout doctrine and aircrew coordination required during confined area landings at night. Emphasize obstacle identification.

(3) CCUI will perform the duties of the crew chief under the supervision of a crew chief instructor.

(4) Instructor shall be a CCI or CCNSI.

Prerequisites. FAM-122 and CAL-161.

6. External Loads (EXT)

a. Purpose. Develop skills necessary for external cargo operations.

b. General

(1) Aircrew may fly this stage in conjunction with the external stage of the pilot syllabus.

(2) Instructor shall be a CCI or CCNSI for EXT-171 and 173.

c. Crew Requirement. CCI/CCUI or CCI/AOUI.

d. Ground Training. Consult FMFRP 5-31 VOL. I-III (Basic Operation/ Equipment and Single Dual Point Hook procedures) and FMFRP 5-31, Vol 1, Multi-Service Helicopter External Air Transport Manual.

e. External Syllabus Support. HST.

f. Flight Training. (4 Flights, 5.0 Hours)

EXT-170	1.0	O, C, RS A(CH-53)	C,R,S

Goal. Introduce aircrewman duties and terminology used during external cargo operations (single point only for the CH-53E)

Requirement

(1) Discuss the cargo hook, cargo hook control panel, aircrewman's portable pendant control, cargo hook emergency release handle, static discharge precautions, and load rigging.

(2) Demonstrate hand and arm signals.

(3) Introduce standardized voice commands and loss of communications procedures.

(4) Stress aircrew coordination.

(5) CCUI will observe and assist the crew chief instructor during initial 0.5 hour of flight, then perform the duties of a crew chief for the remainder of the flight under the supervision of a crew chief instructor. Perform a minimum of three hookups and releases.

EXT-171 1.0 O, C, R, S A(CH-53) N NS C,S

Goal. Introduce aircrewman duties and terminology used durinq external cargo operations at night. (Single point only for the CH-53E).

Requirement

(1) Discuss safety precautions1 use of hover light, and external cargo lighting patterns.

(2) Demonstrate the use of the hover light.

(3) Stress aircrew coordination, lookout doctrine, and helicopter preparation. Perform a minimum of three hookups and releases.

(4) Instructor shall be a CCI or CONSI.

Prerequisite. EXT-170.

EXT-172 1.5 O, C, R, S A(CH-53) C,R,S

Goal. Review aircrewman duties during external cargo operations in the CH-53D. Introduce aircrewman duties and terminology used during dual point external operations in the CH-53E.

Requirement

(1) Discuss proper preflight of dual point system, types of slings, and in-flight characteristics of odd size and aerodynamically unstable loads.

(2) Stress aircrew coordination for dual point external load hookup and release procedures. Perform a minimum of three hookup and release procedures.

(3) Review lookout doctrine, proper voice procedures, and static discharge precautions.

(4) CCUI will observe and assist the crew chief instructor during the initial 0.5 hour of the flight, then perform the duties of the crew chief for the remainder of the flight under the supervision of a crew chief instructor.

EXT-173 1.5 O, C, R, S A(CH-53) N NS C, S

Goal. Review aircrewman duties during external cargo operations at night in the CH-53D. Introduce aircrewman duties and terminology used during night dual point external operations in the CH-53E. This flight will be a progress review.

Requirement

(1) Introduce and practice dual point load operations and terminology. (CH-53E)

(2) Discuss safety precautions, use of hover light, and external cargo lighting patterns.

(3) Stress aircrew coordination, lookout doctrine, and helicopter preparation.

(4) CCUI will perform the duties of a crew chief.

(5) Perform minimum of three hookups and releases.

(6) Instructor shall be a CCI or CCNSI.

Prerequisite. EXT-171.

6. Terrain Flight (TERF)

a. Purpose. Introduce skills necessary to perform TERF maneuvers safely; emphasize the importance of crew coordination, comfort level, and common terminology.

b. General

(1) Rules of conduct will be per MCO P3500.14.

(2) Instructor shall be CCI or TERFI.

c. Crew Requirement. CCI/CCUI or CCI/AOUI.

d. Ground Training. MAWTS-1 Terrain Flight Introduction lecture prior to stage of training.

e. Flight Training. (1 Flight, 1.5 Hours)

TERF-180 1.5 O A(CH-53)

Goal. Introduce the aircrewman to maneuvers, clearances, and navigation while flying in the TERF environment.

Requirement

(1) Discuss crew comfort levels, aircrew coordination, lookout doctrine, terminology, ICS procedures, obstacle clearance, single and dual engine emergencies, and AFCS emergencies.

(2) Assist the pilot in navigating, in low level and contour regimes, using 1:50,000 scale map. Stress landmark identification, prominent terrain features and crew communication for relaying information.

(3) Introduce low level and contour flight.

(4) CCUI will assist the crew chief instructor for initial 0.5 hour of the flight, then for the remainder of the flight perform the duties of a crew chief under the supervision of a crew chief instructor.

8. Combat Capable Check (CCX)

a. Purpose. Demonstrate proficiency in performing the duties as a combat capable crew chief or aerial observer per criteria contained in the appropriate H-53 NATOPS Flight Manual and OPNAVINST 3710.7.

b. General

(1) A qualified Crew Chief Instructor shall evaluate this flight.

(2) The CCUI or AOUI shall complete a H-53 NATOPS Flight Manual open and closed book test prior to the combat capable checkride. Upon completion of this flight, the student will be NATOPS qualified as a crew chief or aerial observer.

c. Crew Requirement. CCI/CCUI or CCI/AOUI.

d. Flight Training. (1 Flight, 1.5 Hours)

CCX-191	1.5	O, C, R, S A(CH-53) (N) (NS)	C,R,S

Goal. Evaluate systems knowledge of the H-53 and the capability to perform duties as a combat capable crew chief or aerial observer.

Requirement

(1) Review systems knowledge of the H-53 to include external lift Systems.

(2) Brief and demonstrate proficiency of aircraft emergency procedures as per the H-53 NATOPS Flight Manual.

(3) Instructor shall be a CCI.

Prerequisite. All prior applicable 100 level flights.

542. COMBAT READY PHASE. Aircrew undergoing instruction in this phase must have completed the MAWTS-1 Course Catalog Academic Support package lectures applicable to this phase of training prior to conducting Night Systems events. Night Systems rules of conduct will be per MCO P3500.14. Aircrew will fly all Night Systems events in this level under ambient light conditions of .0022 LUX or greater. The aircrewman under instruction is considered NSQ HLL (able to transport troops) when the following events have been completed: FORM-211, CAL-222, CAL-223, TERF-233, TERF-234, EXT-241, TAC-281. The above listed events require a CCNSI for all initial qualifications.

1. Internal Loads (INT)

a. Purpose. Refine crew chief duties in loading, securing, unloading passengers, cargo and vehicles.

b. General. Aircrew may fly these flights in conjunction with any stage in the pilot syllabus.

c. Crew Requirement. CC or CC/CCUI.

d. Flight Training. (2 Flights, 2.0 Hours).

INT-200 1.0 O, C, R A(CH-53) (N) (NS)

Goal. Review crew chief duties when carrying internal cargo and/or vehicles.

Requirement

(1) Review safety precautions and procedures used when transporting dangerous cargo petroleum1 oxygen, and lubricants (POL), liquid oxygen (LOX), pyrotechnics, and class V cargo (ammunition), etc.

(2) Review cargo and/or vehicle loading, securing, and unloading procedures.

INT-201 1.0 O, C, R A(CH-53) (N) (NS)

Goal. Review passenger briefing, embarking, securing, and debarking procedures.

Requirement

(1) Discuss problems encountered while embarking, securing, and debarking passengers.

(2) Review passenger briefing, embarking, securing and debarking procedures.

2. Formation (FORM)

a. Purpose. Review aircrew responsibilities during formation flight and introduce responsibilities of tactical formation flight, day and night.

b. General

(1) Aircrew may fly these flights in conjunction with the pilot syllabus.

(2) A CCNSI is required on initial FORM-211.

c. Crew Requirement. CC/AO, CC/CCUI or CC/AOUI.

d. Flight Training. (2 Flights, 3.5 Hours).

FORM-210 1.5 C, R A(2 CH-53) C,R

Goal. Review formation and introduce tactical formation flight.

Requirement

(1) Discuss formations, closure rates, hand and arm signals, lead changes (to include form lead/tactical lead) aircrew coordination, loss of visual contact with wingman, comfort levels, emergency procedures.

(2) Introduce section tactical formation maneuvering as discussed in NWP 3-22.5-CH53 Tactical Manual i.e. tac, in-place, split/cross, dig/pinch, break, and center turns.

(3) Review section takeoffs, approaches, landings, and waveoffs as contained in NWP 3-22.5-CH53 Tactical Manual.

FORM-211 2.0 C,R A(2 CH-53) N NS C,R

Goal. Introduce night tactical formation flight utilizing NVGs.

Requirement

(1) Brief and discuss aircraft lighting, closure rate, aircrew coordination, loss of visual contact with wingman, and comfort level and emergency procedures.

(2) With .0022 LUX or greater illumination, review night section takeoffs, landings, parade position, cruise principles, cross overs, break ups, rendezvous, lead changes, and landings as contained in NWP 3-22.5-CH53 Tactical Manual.

Prerequisite. CCNSI required for initial flight.

3. Confined Area Landings (CAL)

a. Purpose. Introduce CALs with multiple aircraft during day and night.

b. General

(1) Aircrew may fly these flights in conjunction with the pilot syllabus.

(2) Read Paragraph 542.

(3) A CCNSI is required on initial CAL-222/223.

c. Crew Requirement. CC, CC/CCUI or CC/AOUI. AG/AO flies CAL-221, CAL-222, CAL-223. AO required for CAL-222 and CAL-223 if not an instructional flight.

d. Flight Training. (4 Flights, 6.5 Hours)

CAL-220 1.5 O, R A(CH-53)

Goals. Introduce and practice CALs using tactical approaches.

Requirement

(1) Discuss aircrew coordination.

(2) Introduce crew chief responsibilities during CALs.

(3) Review lookout doctrine, rotor clearances, obstacle clearances, and LZ suitability.

CAL-221 1.5 C, R, S A(2 CH-53) C,R,S

Goal. Introduce and practice section CALs.

Requirement

(1) Brief and discuss aircrew coordination, obstacle clearances, lead changes, and tactical formations as depicted in NWP 3-22.5-CH53 Tactical Manual. Discuss section landings with reduced visibility (i.e., sand, dust, snow, etc.).

(2) Introduce section takeoffs, approaches, and landings to a CAL site.

CAL-222 1.5 R A(CH-53) N NS R

Goal. Introduce and practice CALs using NVGs.

Requirement

(1) Discuss depth perception, drift corrections, possible reduced visibility, obstacle clearance, and NVG failures.

(2) With .0022 LUX or greater illumination, practice aircrewman responsibilities during night CALs while using NVGs.

(3) Review fixation, dark adaptation, helicopter preparation, aircraft lighting.

Prerequisite. CCNSI required for initial flight.

CAL-223 2.0 C, R, S A(2 CH-53) N NS C,R,S

Goal. Introduce and practice section CALs using NVGs.

Requirement

(1) Review depth perception, drift corrections, possible reduced visibility, obstacle clearance, and NVG failures.

(2) With .0022 LUX or greater illumination, identify wingman's position, and relay information to the pilots.

Prerequisite. CCNSI required for initial flight.

4. Terrain Flight (TERF)

a. Purpose. Enhance aircrew responsibilities and lookout doctrine with TERF maneuvers/navigation and introduce section maneuvering in the day and night TERF environment.

b. General

(1) Currency restrictions per MCO P3500.14. Aircrewman is considered TERF qualified at the completion TERF-234.

(2) Read Paragraph 542.

(3) A CCTERFI is required for initial TERF-231/232 and a CCNSI is required for initial TERF-233/234.

c. Crew Requirement. CC/AO, CC/CCUI or CC/AOUI.

d. Prerequisite. Consult the MAWTS-1 course catalog for the recommended lecture in the Academic Support Package applicable to this stage of training.

e. Flight Training. (4 Flights, 7.0 Hours)

TERF-231 1.5 R A(CH-53) R

Goal. Review maneuvers and clearance while flying in a TERF environment.

Requirement

(1) Discuss crew comfort levels, aircrew coordination, lookout doctrine, terminology, ICS procedures, obstacle clearance, single and dual engine emergencies, and AFCS emergencies.

(2) Review low level and contour flight.

Prerequisite. CCTERFI required for initial flight.

TERF-232 1.5 O, C, R, S A(2 CH-53) C,R,S

Goal. Review maneuvers and clearance for a section of aircraft in the TERF environment.

Requirement

(1) Discuss crew comfort levels, aircrew coordination, lookout doctrine, terminology, ICS procedures, aircraft clearance.

(2) Review low level and contour flight.

Prerequisite. CCTERFI required for initial flight.

TERF-233 2.0 R A(CH-S3) N NS R

Goal. Review maneuvers and clearance while flying in a TERF environment using NVGs.

Requirement

(1) With .0022 LUX or greater illumination, discuss crew comfort levels, aircrew coordination, lookout doctrine, terminology, ICS procedures, obstacle clearance, single and dual engine emergencies, and AFCS emergencies.

(2) Review low level and contour flight.

Prerequisite. CCNSI required for initial flight.

TERF-234 2.0 O, C, R, S A(2 CH-53) N NS C,R,S

Goal. Review maneuvers and clearance for a section of aircraft in the TERF environment using NVGs.

Requirement

(1) With .0022 LUX or greater illumination, discuss crew comfort levels, aircrew coordination, lookout doctrine, terminology, ICS procedures, aircraft clearance.

(2) Review low level and contour flight.

Prerequisite. CCNSI required for initial flight.

5. External Loads (EXT)

a. Purpose. Develop skills necessary for external loads in confined areas.

b. General

(1) Aircrew may fly these flights in conjunction with the pilot syllabus. Crew Chief should review OH-5-4A Helicopter External Cargo Loading Manual.

(2) Read Paragraph 542.

(3) A CCNSI is required for initial EXT-241.

c. Crew Requirement. CC/AO, CC/CCUI or CC/AOUI.

d. External Syllabus Support. HST.

e. Flight Training. (2 Flights, 3.0 Hours)

EXT-240 1.5 O,C,R,S A(CH-53) C,R,S

Goal. Introduce and practice externals to a confined area.

Requirement

(1) Discuss aircrew coordination and flight with external loads.

(2) Introduce and practice external cargo operations to confined areas.

(3) Review safety precautions, blowing debris, load rigging and obstacle clearance on approach and takeoff from the drop zone.

EXT-241 1.5 O, C, R, S A(CH-53) N NS C,R,S

Goal. Introduce and practice external operations utilizing NVGS.

Requirement

(1) Discuss aircrew coordination and flight with single or dual point external loads.

(2) .0022 LUX or greater illumination.

(3) Review safety precautions, external cargo lighting patterns, use of chem lights to mark the external pendant and the external load, blowing debris, load rigging and obstacle clearance on approach and takeoff from the drop zone.

Prerequisite. CCNSI required for initial flight.

6. Field Carrier Landing Practice (FCLP)

a. Purpose. Develop procedures and aircrew coordination required for shipboard operations.

b. General. Discuss and become familiar with all aspects of shipboard operations, and aircrew coordination applicable to the carrier qualification stage as described in the appropriate CH-53 NATOPS flight manual, NWP-42, the LHA/LPH/LHD NATOPS, and OPNAVINST 3710.7__. Each event requires five FCLPs.

c. Crew Requirements. CC/,CC/CCUI or CC/AOUI. AG/O flies FCLP-271 and FCLP-273.

d. Flight Training. (3 Flights, 3.0 Hours).

FCLP-271 1.0 C,R A(CH-53) C,R

Goal. Introduce day FCLPs.

Requirement

(1) Discuss shipboard operations.

(2) Introduce procedures required for shipboard operations.

(3) Review ditching procedures.

FCLP-272 1.0 C, R A(CH-53) N

Goal. Introduce night, unaided FCLPs.

Requirement

(1) Discuss night shipboard operations.

(2) Introduce procedures required for shipboard operations at night.

(3) Review ditching procedures at night.

FCLP-273 1.0 R A(CH-53) N NS R

Goal. Introduce NVG FCLPs.

Requirement

(1) Discuss night shipboard operations on NVGs.

(2) Review procedures required for shipboard operations at night.

(3) Review ditching procedures at night.

Prerequisite. Aircrew shall be NSQ for appropriate light level conditions.

7. Tactics (TAC)

a. Purpose. Introduce aircrew responsibilities with tactical missions.

b. General

(1) Aircrew may fly these flights in conjunction with the pilot syllabus.

(2) Read Paragraph 542.

(3) Completion of TAC-281 satisfies the requirement for NSQ HLL.

(4) A CCNSI is required on initial TAC-281.

c. Crew Requirement. CC/AG, CC/CCUI or CC/AOUI.

d. Ground Training. Consult the MAWTS-1 course catalog for the recommended lectures in the Academic support Package applicable to this stage of flight.

e. Flight Training. (2 Flights, 4.0 Hours)

TAC-280	2.0	C,R A(2 CH-S3)	C,R

Goal. Introduce aircrewman responsibilities during a section tactical operation.

Requirement

(1) Discuss weather considerations.

(2) Review safety precautions, comfort level, aircrew coordination, terminology, lookout doctrine, and scanning techniques.

TAC-281	2.0	R A(2 CH-53) N NS	R

Goal. Introduce the aircrewman's responsibilities during tactical operations with multiple aircraft using NVGs.

Requirement

(1) Discuss taxi drop of internal cargo, paradrop operations, noting differences between day and night operation, and embarking/debarking of troops using NVGs.

(2) Review loading, securing, and unloading of cargo, vehicles, and/or troops utilizing NVGs.

(3) Stress comfort level.

Prerequisite. CCNSI required for initial flight.

8. Air-to-Ground (AG)

a. Purpose. Develop procedures required to provide fire on targets of opportunity.

b. General

(1) Aerial gunnery qualification lectures and initial instructional flights must be conducted by a WTCCI or AGI

(2) At the completion of this stage, the aircrewman will demonstrate knowledge of weapons systems and ordnance delivery with crew served weapons.

c. Crew Requirement. CC/AG, AGI/COUI or AGI/AGOUI.

d. Ground Training. Review all applicable manuals, MAWTS-1 Academics support package lectures, and appropriate ground schools.

e. Flight Training. (2 Flights, 3.0 Hours)

AG-290 1.5 C, R A(CH-53) C,R

Goal. Introduce gunnery training with the XM-218 (.50 Cal Machine Gun).

Requirement

(1) Brief and discuss use and application of crew served weapons checklist, fire discipline and aiming techniques.

(2) Introduce ordnance loading, preflight, operation, postflight, and safety procedures associated with ordnance evolutions.

(3) Practice firing on prebriefed targets with crew served weapons, stressing crew coordination.

Prerequisites

(1) AGI for initial flight or when any aircrew are not designated aerial gunners.

(2) CCX-191.

Ordnance. 500 rds .50 Cal.

AG-291 1.5 C,R A(CH-53) C,R

Goal. Refine aerial gunnery with the XM-218 (.50 Cal machine gun).

Requirement

(1) Brief and discuss firing while in a landing transition.

(2) Review ordnance loading, preflight, postflight, safety procedures associated with ordnance evolutions and the use of

(3) Practice firing on prebriefed targets with crew served weapons, stressing crew coordination. Practice firing in different flight profiles, (i.e., diving, hovering, etc.).

Prerequisites

(1) AGI for initial flight or when any aircrew are not designated aerial gunners.

(2) AG-290.

Ordnance. 500 rds .50 cal.

543. COMBAT QUALIFICATION PHASE. Aircrew undergoing instruction in this phase must have completed the MAWTS-1 Course Catalog Academic Support Package lectures applicable to this phase of training prior to conducting Night Systems events. Night Systems rules of conduct will be per MCO P3500.14. Aircrew shall fly all Night Systems events listed below under ambient light conditions of below .0022 LUX. An aircrewman under instruction is NSQ LLL (able to transport troops) when the following events have been completed: CAL-320, CAL-321, TERF-330, TERF-331, EXT-342 and EXT-343. The above listed flights require a CCNSI for initial qualification. Aircrew may fly all other night systems events in this phase under HLL or LLL conditions.

1. Confined Area Landings (CAL)

a. Purpose. Conduct CALs in Low Light Level conditions (below .0022 LUX).

b. General

(1) A CCNSI is required on initial flights.

(2) Read Paragraph 543.

c. Crew Requirement. CC/AO, CC/CCUI or CC/AOUI.

d. Prerequisite. Crew member under instruction must be NSQ HLL.

e. Flight Training. (2 Flights, 3.5 Hours).

CAL-320	1.5	C,R A(CH-53) N NS	C,R

Goal. Perform NVG low work and CALs during low light level conditions.

Requirement. Brief/discuss inadvertent IMC, comfort levels and crew/ cockpit coordination.

CAL-321	2.0	O, C, R, S A(2 CH-53) N NS	C,R,S

Goal. Develop proficiency in section CAL operations using NVGs during low light level conditions.

Requirement

(1) Brief/discuss stress, aircrew coordination, inadvertent IMC and comfort level.

(2) Review multi aircraft operations using NVGs in low light conditions.

2. Terrain Flight (TERF)

a. Purpose. Develop TERF crew coordination skills in the night environment. Develop proficiency in TERF using NVGs in LLL conditions.

b. General

(1) Currency requirements are per MCO P3500.14.

(2) A CCNSI is required on initial flights.

c. Crew Requirement. CC/AO, CC/CCUI or CC/AOUI.

d. Prerequisite. Be familiar with the TERF classes in the Academic Support Package applicable to this stage of flight.

e. Flight Training. (2 Flights, 4.0 Hours)

TERF-330	2.0	C, R A(CH-53) N NS	C,R

Goal. Review maneuvers and clearance while flying in a TERF environment using NVGs in LLL conditions.

Requirement

(1) Discuss crew comfort levels, aircrew coordination, lookout doctrine, terminology, ICS procedures1 obstacle clearance, single and dual engine emergencies, and AFCS emergencies.

(2) Review low level and contour flight.

TERF-331	2.0	C,R,S A(2 CH-53) N NS	C,R,S

Goal. Review maneuvers and clearance for an aircraft section in the TERF environment using NVGs in LLL conditions.

Requirement

(1) Discuss crew comfort levels, aircrew coordination, lookout doctrine, terminology, ICS procedures, aircraft clearance.

(2) Review low level and contour flight.

3. External Loads (EXT)

a. Purpose. Develop proficiency with heavy lift external loads from confined areas in the TERF environment.

b. General

(1) Aircrew may fly these flights in conjunction with the pilot syllabus. When practical, flights should practice externals with heavy lift FMF equipment.

(2) EXT-341 requires a CCTERFI for initial qualification.

(3) EXT-342 and 343 requires a CCNSI for initial qualification.

(4) Transport loads either single or dual point, as appropriate.

c. Crew Requirement. CC/AO, CC/CCUI or CC/AGOUI.

d. Ground Training. Consult FMFRP 5-31 VOL. I-III (Basic Operation/ Equipment and Single Dual Point Hook Procedures) and FMFRP 5-31, Vol 1, Multi-Service Helicopter External Air Transport Manual.

e. External Syllabus Support. HST.

f. Flight Training. (3 Flights, 4.5 Hours)

EXT-341 1.5 O, C, R, S A(CH-53) C,R,S

Goal. Introduce and practice external operations in the TERF environment.

Requirement

(1) Discuss varying hookup options, load length considerations for TERF flight regime, and peculiar safety considerations.

(2) Introduce and practice single and dual point external cargo carrying operations in a TERF environment.

(3) Review aircrew responsibilities during TERF flight, cargo pendant release procedures, and single engine emergencies in the TERF environment. Crew chief shall be qualified and current in TERF and external operations.

(4) Emphasis will be on TERF flight with an external load.

Prerequisite. CCTERFI required for initial flight.

EXT-342 1.5 O,C,R,S A(CH-53) N NS C,R,S

Goal. Introduce external operations in LLL conditions, dual point preferred for CH-53E.

Requirement

(1) Discuss helicopter support team requirements to conduct external cargo operations when aircrew are using NVGs, pendant and load marking, and aircraft lighting.

(2) Introduce external operations using NVGs in LLL conditions.

(3) Review ground relationship, drift correction, terminology, cargo hook, and pendant inspection.

Prerequisite. CCNSI required for initial flight.

EXT-343 1.5 O, C, R, S A(CH-53) N NS C,R,S

Goal. Introduce external operations in the low level and or contour profiles using NVGs.

Requirement

(1) Discuss helicopter support team requirements to conduct external cargo operations when aircrew are using NVGs, pendant and load marking, and aircraft lighting.

(2) Review ground relationship, drift correction, terminology, cargo hook, and pendant inspection.

Prerequisite. CCNSI required for initial flight.

4. Defensive Measures (DM)

a. Purpose. Introduce the aircrewman's responsibilities during defensive measures and EW tactics in a medium threat environment. Upon completion of this stage the aircrew should have an understanding of the maneuvers and employment techniques necessary to counter a low altitude surface-to-air threat.

b. General

(1) The utilization of an EW range with threat systems that include electromagnetic and ground based threat simulation; e.g., smokey SAMs, hand-held pyrotechnics, etc., will greatly enhance aircrew training. The use of an APR-39 trainer or WST simulator will aid in preparing the aircrew prior to flight.

(2) A CCDMI is required on initial flights.

c. Crew Requirement. CC/AO, CC/CCUI or CC/AOUI.

d. Prerequisites

(1) Aircrew under instruction will be familiar with procedures outlined in the helicopter DM Guide and should have completed academic instruction on the use of DECM equipment. Consult the MAWTS-1 course catalog for the recommended lectures in the Academic Support Package applicable to this stage of flight.

(2) TERF-234.

e. Flight Training. (1 Flights, 2.0 Hours)

DM-350	2.0	O, C, R A(2 CH-53)	C, R

Goal. Introduce and practice aircrewman responsibilities. Practice basic operations and procedures for DECM equipment.

Requirement

(1) Brief and discuss DECM equipment, aircrew coordination, section tactics, low altitude emergencies, and use of RADAR horizons and RADAR masking techniques as they relate to specific air defense systems.

(2) Introduce section maneuvering against IR missiles on low altitude RADAR guided threats on EW range if available.

(3) Introduce defensive measures while dispersing chaff and flares.

Ordnance. 30 chaff and 30 flares.

5. Carrier Qualification (CQ)

a. Purpose. To qualify the aircrewman in day and night shipboard operations.

b. General. Discuss and become familiar with all aspects of shipboard operations and aircrew coordination applicable to the carrier qualification stage as described in the appropriate NATOPS Flight Manual, NWP-42, the LHA/LPH/LHD NATOPS, and OPNAVINST 3710.7_. Each flight requires five CQs.

c. Crew Requirement. CC/CC/CCUI or CC/AOUI.

d. Flight Training. (3 Flights, 4.5 Hours)

CQ-370 1.5 O, C, R A(CH-53) C, R

Goal. Introduce day CQs.

Requirement

(1) Discuss LSE signals, voice procedures, and closure rates.

(2) Demonstrate the procedures required for shipboard operations.

CQ-371 1.5 O, C, R A(CH-53) N

Goal. Introduce night, unaided CQs.

Requirement

(1) Discuss night fixation, deck lighting, LSE signals, voice procedures, and closure rates.

(2) Introduce the procedures required for shipboard operations during the hours of darkness.

CQ-372 1.5 O, C, R A(CH-53) N NS C,R

Goal. Introduce NVG CQs.

Requirement.

(1) Discuss NVG aircraft/deck lighting, NVG failures, LSE signals, voice procedures, and closure rates.

(2) Introduce the procedures required for shipboard operations during the hours of darkness on NVGs.

Prerequisite. Aircrew shall be NSQ for appropriate light level conditions.

6. Tactics (TAC)

a. Purpose. Develop aircrew responsibilities during tactical operations in a low to medium threat environment.

b. General

(1) All mission briefs require an intelligence brief. To the greatest extent possible incorporate the employment of escort aircraft (fixed or rotary wing), the employment of the ALE-39 and the APR-391 the .50 caliber machine gun, and wearing of the AR-5/M-24 gas masks. Aircrew shall conduct these flights under the standards required in MCO 3501.4, MCCRES, Volume III, Marine Heavy Helicopter Squadrons and/or MCO 3501.8 MCCRES, Volume IX, Special Operations.

(2) Read Paragraph 543.

(3) A CCNSI is required for initial TAC-381.

c. Prerequisite. NSC-460 if AR-5/M-24 used.

d. Crew Requirements. CC/AG, AGI/CCUI or AGI/AGOUI.

e. Flight Training. (2 Flights, 4.0 Hours)

TAC-380 2.0 R A(2 CH-53) R

Goal. Introduce and practice aircrewman responsibilities during tactical operations with multiple aircraft.
Requirement

(1) Discuss taxi drop of internal cargo, paradrop operations, and embarking/debarking of troops.

(2) Introduce and practice aircrewman responsibilities during a tactical operation.

(3) Review loading, securing, and unloading of cargo, vehicles, and/or troops.

Prerequisites. All aircrew should be aerial gunners. An AGI is required if aircrew are not aerial gunners.

Ordnance. 500 rounds of .50 caliber ammunition, 30 chaff and 30 flares.

TAC-381 2.0 C, R A(2 CH-53) N NS C,R

Goal. Introduce and practice aircrew responsibilities during tactical operations at night with multiple aircraft using NVGs.

Requirement

(1) Discuss taxi drop of internal cargo, paradrop operations, noting differences between day and night operations and embarking and debarking of troops at night.

(2) Introduce and practice aircrewman responsibilities during a tactical operation at night on NVGs.

(3) Review loading, securing, and unloading of cargo, vehicles, and/or troops and NVG usage.

(4) Stress comfort level.

(5) Crew Chief shall be NSQ for appropriate ambient light conditions.

(6) All aircrew shall be designated aerial gunners.

Ordnance. 500 rounds of .50 caliber ammunition, 30 chaff and 30 flares.

7. Air-to-Ground Gunnery and Qualification (AG)

a. Purpose. Demonstrate proficiency in delivering fire on targets of opportunity at night while using NVGs.

b. General

(1) Completion of this stage is the minimum requirement for aerial gunnery training. AGUI must complete the aerial gunnery evaluation event, AG-391, prior to firing without an AGI.

(2) AG-391 certifies the AGUI as an aerial gunner with the respective weapon. Aircrew may be designated an Aerial Gunner by the commanding officer after completing AG-391.

(3) Aircrew may conduct these events in either HLL or LLL conditions but must be NSQ in the appropriate light level condition.

(4) Aerial gunnery lectures and initial instructional flights must be conducted by a WTCCI or AGI

(5) A CCNSI is required for initial flights.

c. Crew Requirement. CC/AG, AGI/CCUI or AGI/AGOUI.

d. Prerequisite. AG-290 or 291.

e. Ground Training. Review appropriate chapters of the NWP 3-22.5-CH53 Tactical Manual.

f. Flight Training. (2 Flights, 2.0 Hours).

AG-390 1.0 C, R A(CH-53) N NS C,R

Goal. Introduce XM-218 gunnery while using NVGs.

Requirement

(1) Brief/discuss weapons malfunctions.

(2) Review all previous gunnery work, stressing safety procedures. Aircrew shall use NVGs.

Prerequisite

(1) AG-290 or 291.

(2) Aircrew shall be NSQ in the appropriate light level condition.

(3) An AGI CCNSI required for initial flight.

Ordnance. 500 rds .50 cal.

AG-391 1.0 C, R A(CH-53) N NS C,R

Goal. XM-218 aerial gunner certification.

Requirement. Demonstrate proficiency with the XM-2l8 while using NVGs.

Prerequisite

(1) AG-390.

(2) Aircrew shall be NSQ in the appropriate light level condition.

(3) An AGI CCNSI required for initial flight.

Ordnance. 500 rds .50 cal.

544. FULL-COMBAT QUALIFICATION PHASE

1. Helicopter Insertion/Extraction Techniques (HIE)

a. Purpose. Develop proficiency with insertion/extraction methods required in executing special missions, by emphasizing rappelling, fast-rope, Special Insertion/Extraction (SPIE), helo casting, and aerial delivery.

b. General. The crew chief shall conduct a brief with the specific team leader then the entire team prior to take off to discuss mission requirements and aircraft safety procedures.

c. Crew Requirement. CC/AO, CC/CCUI or CC/AOUI.

d. Prerequisite

(1) Aerial delivery and Rope Suspension Training lecture.

(2) Aircrew shall be NSQ for appropriate light level conditions and qualified to carry troops per MCO P3500.14 in order to conduct HIE-400.

e. Flight Training. (3 Flights, 4.5 Hours)

HIE-400 1.5 O, C, R, S A(CH-53) (N) (NS) C,R,S

Goal. Introduce procedures for tactical insertion and/or extraction of a ground force via rappelling, fast rope or SPIE.

Requirement

(1) Discuss

(a) Aircrew coordination

(b) Safety precautions

(c) Signals

(d) Obstacle clearance

(e) Emergency procedures

(2) Introduce techniques for inserting personnel by fast rope, rappelling, or SPIE rig.

HIE-401 1.5 O, C, R, S A(CH-53) C,R,S

Goal. Introduce procedures for tactical insertion helocast.

Requirement

(1) Discuss

(a) Aircrew coordination

(b) Safety precautions

(c) Obstacle clearance

(2) Introduce techniques for inserting personnel by helocast.

HIE-402 1.5 O, C, R, S A(CH-53) (N) (NS) C,R,S

Goal. Introduce procedures for tactical insertion via paraops.

Requirement

(1) Discuss

(a) Aircrew coordination

(b) Safety precautions

(c) Night Signals

(d) Obstacle clearance

(e) Emergency procedures to include NVG emergencies

(2) Introduce techniques for inserting personnel by paraops.

Prerequisite. Aircrew shall be NSQ for the appropriate light level conditions.

2. Internal Loads (INT) (CH-53E only)

a. Purpose. Introduce crew chief duties in loading, securing, unloading, internal procedures and use of the Tactical Bulk Fuel Dispensing System (TBFDS)

b. General

(1) Aircrew may fly these flights in conjunction with any stage of the pilot syllabus.

(2) Instructor shall be a CCI or CCNSI if NVGs are used.

c. Crew Requirement. CCI/CCUI.

d. Ground Training. Study the A1-H53BE-GLG-000 (Cargo Loading Manual), NATOPS Flight Manual, and helicopter loading and equipment storage.

e. Flight Training. (1 Flights, 2.0 Hours)

INT-410 2.0 O, C, R, S A(CH-53) (N) (NS)

Goal. Review internal procedures and introduce the use of the TBFDS.

Requirement

(1) Discuss procedures for refueling other types of aircraft and/or vehicles.

(2) Discuss proper FARP procedures to include preflight, taxiing aircraft, mechanical configuration, lighting configurations, postflight and clean-up.

(3) Review proper restraint system and loading scenarios for different tank setups and fuel line configuration.

(4) If troops are embarked, review passenger briefing, embarking, securing and debarking troops.

Prerequisite. INT-201.

3. Defensive Measures (DM)

a. Purpose. Introduce the aircrewman's responsibilities during section defensive measures against helicopter and fixed-wing aggressor aircraft. Upon completion of this stage the aircrew should have an understanding of the maneuvers and employment techniques necessary to counter air to air threat.

b. General. A designated CC DMI is required on initial events.

c. Crew Requirement. CC/AO, CC/CCUI or CC/AOUI.

d. Prerequisite

(1) Aircrew should be familiar with procedures outlined in the helicopter DM Guide and should have completed academic instruction on the use of DECM equipment. Consult the MAWTS-1 course catalog for the recommended lectures in the Academic Support Package applicable to this stage of flight.

(2) TERF-234.

e. Flight Training. (2 Flights, 1.0 Hour)

DM-450 0.5 C,R A(2 CH-53) vs. 1 RIW Aggressor C, R

Goal. Introduce and practice aircrewman responsibilities as a section against an adversary helicopter.

Requirement

(1) Discuss lookout doctrine, terminology, section maneuvering, aircrew coordination, and aircraft limitations.

(2) Introduce section helicopter defensive measures against an adversary helicopter attacking from prebriefed and unknown locations.

(3) Review and stress safety precautions.

Ordnance. 30 flares.

DM-451	0.5	C, R A(2 CH-53) vs. 1 F/W Aggressor	C, R

Goal. Introduce and practice aircrewman responsibilities in a section against a fixed-wing adversary.

Requirement

(1) Review and stress safety precautions, crew comfort, lookout doctrine, and aircrew coordination.

(2) Practice section helicopter defensive measures against a fixed wing adversary attacking from prebriefed and unknown locations.

Ordnance. 30 flares.

4. Nuclear, Biological, and Chemical (NBC)

a. Purpose. Conduct flight operations while wearing NBC protective equipment.

b. General

(1) Aircrew may fly this event during the FAM, CAL, TAC, or NBC stage of the pilot syllabus. For the safe execution of initial NBC flights, one pilot and one aircrewman shall remain unmasked, but on subsequent flights, all aircrew may remain masked.

(2) The M-24 aircrew protective mask is authorized for squadrons that do not have the AR-5.

c. Crew Requirement. CC/AO, CC/CCUI or CC/AOUI.

d. Ground Training

(1) Discuss the wearing of the NBC defense suit, mask, hood, gloves and boots. Introduce proper maintenance and serviceability checks on equipment, emphasizing donning of equipment.

(2) Discuss physiological factors associated with flying with NBC protective equipment.

(3) Consult the MAWTS-1 Course Catalog for the recommended Academic Support Package lecture applicable to this flight.

e. Flight Training. (1 Flight, 1.0 Hour)

NBC-460	1.0	R A(CH-53) (N) (NS)	R

Goal. Introduce flight in a simulated NBC environment with either the AR-5 or M-24 masks.

Requirement

(1) Discuss chemical agents, biological agents, fatigue, and distortion of vision while using the M-24 or AR-5 gas mask.

(2) Introduce donning of the chemical suit and M-24 or AR-5 gas mask, perform a portion of preflight wearing full NBC equipment. Introduce wearing of mask during taxi, low work takeoff and landings.

5. Tactics (TAC)

a. Purpose. Conduct practical application exercises, using skills developed through the syllabus. These exercises will include planning, briefing, and execution of an assault support mission in a medium to high threat environment.

b. General. Aircrew shall conduct these flights under the standards required in MCO 3501.4, MCCRES, Volume III, Marine Heavy Helicopter Squadrons and/or MCO 3501.8 MCCRES, Volume IX, Special Operations. Aircrew may conduct these flights in high or low light level conditions, if the participating aircrew have the respective NSQ designation.

c. Crew Requirement. CC/AGO, CC/CCUI or CC/AGOUI.

d. Ground Training. Consult the MAWTS-1 course catalog for the recommended lectures in the Academic Support Package applicable to this stage of flight.

e. Flight Training. (2 Flights, 4.0 Hours).

TAC-480 2.0 R A(3+ ACFT) (N) (NS)

Goal. Develop integrated tactical flight proficiency in a high threat environment.

Requirement

(1) Review TAC-380.

(2) Brief and discuss items in previous tactics as well as flight requirements and ordnance usage.

Prerequisite. Aircrew should be aerial gunners. An AGI is required if aircrew are not aerial gunners.

Ordnance. 1000 rds of .50 cal ammo, 30 chaff.

TAC-482 2.0 O,C,R,S A(2+ ACFT) (N) (NS) C,R,S

Goal. Develop tactical flight proficiency in urban terrain operations at night.

Requirement. Discuss the effects of ambient lighting on night systems in an urban area.

Prerequisite

(1) Aircrew should be aerial gunners. An AGI is required if aircrew are not aerial gunners.

(2) Aircrew shall be NSQ for the appropriate light level conditions.

(3) TAC-380.

6. Moving Target Gunnery (MTG)

a. Purpose. Introduce techniques and profiles in conducting moving target gunnery.

b. General. Refer to the appropriate Chapter in the MAWTS-1 Course catalog.

c. Crew Requirements. CC/AG, AGI/CCUI or AGI/AGOUI.

d. Flight Training. (1 Flight, 1.5 Hours)

MTG-490	1.5	C, R A(CH-53)	C,R

Goal. Introduce moving target gunnery.

Requirement. Introduce moving target gunnery using shadow gunnery, towed banner, dart or moving land target if available.

Prerequisite

(1) Aircrew should be aerial gunners. An AGI is required if aircrew are not aerial gunners.

(2) AG-391.

Ordnance. 500 rds .50 cal.

550. INSTRUCTOR TRAINING

1. Crew Chief Instructor Under Training

a. Purpose. Develop proficiency in instructional procedures and techniques to support crew chief training.

b. General

(1) Fleet Replacment Squadron

(a) All instructor under training flights are intended to emphasize standardization of crew chief procedures and techniques. The Crew Chief Instructor Under Training (CCIUT) should be capable of demonstrating all training objectives associated with the combat capable flight instruction.

(b) IUT events 500 through 508 shall be complete prior to being designated a Crew Chief Instuctor. Upon completion of STANX-508, the CCI is capable of instructing all combat capable phase events to include TERF and Night Systems events.

(2) Fleet Operating Squadrons. For criteria concerning all instructor certifications and designations refer to T&R Volume 1 (MCO P3500.14_) MAWTS-1 Course Catalog contains the academic and syllabus requirements for all instructor certifications.

c. Crew Requirement. CCI/CCIUI.

d. Flight Training. 8 Flights, 8.0 Hours).

FORM-500 1.0 A(2CH-53)

Goal. Demonstrate crew chief responsibilities and instructional techniques during formation flight.

Requirement

(1) Discuss parade/cruise position and formations, closure rate, and hand and arm signals.

(2) CCIUT will perform the duties of the crew chief during the flight.

FORM-5O1 1.0 A(2 CH-53) N NS

Goal. Demonstrate crew chief responsibilities and instructional techniques during night formation flight.

Requirement

(1) Discuss closure rate, aircraft lighting, light signals, lookout responsibilities, and target fixation.

(2) Stress aircrewman responsibilities during formation flying at night.

(3) CCIUT will perform the duties of the crew chief during the flight.

CAL-502 1.0 A(CH-53)

Goal. Demonstrate crew chief responsibilities and instructional techniques during CALs.

Requirement

(1) Discuss confined area landings and aircrew coordination.

(2) Stress lookout doctrine, main rotor, tail rotor, and aircraft fuselage clearances.

(3) CCIUT will perform the duties of the crew chief during the flight.

CAL-503 1.0 A(CH-53) N NS

Goal. Demonstrate crew chief responsibilities and instructional techniques during night CALs.

Requirement

(1) Discuss confined area landings and aircrew coordination on NVGs.

(2) Stress lookout doctrine, main rotor, tail rotor, and aircraft fuselage clearances.

(3) CCIUT will perform the duties of the crew chief during the flight.

TERF-5O4 1.0 A(CH-53)

Goal. Demonstrate instructional techniques during maneuvers and navigation while flying in the TERF environment maintaining proper clearance.

Requirement

(1) Discuss crew comfort levels, aircrew coordination, lookout doctrine, terminology, ICS procedures, obstacle clearance, single and dual engine emergencies, and AFCS emergencies.

(2) Assist the pilot in navigating, in low level and contour regimes, using 1:50,000 scale map. Stress landmark identification, prominent terrain features and crew communication for relaying information.

(3) CCIUT will perform the duties of the crew chief during the flight.

EXT-505 1.0 A(CH-53)

Goal. Demonstrate the crew chief duties, terminology and instructional techniques used during external load operations.

Requirement

(1) Review the cargo hooks, cargo hook control panel, aircrewman's portable pendant control, cargo hook emergency release handle, static discharge precautions, and load rigging.

(2) Review hand and arm signals.

(3) Perform minimum of three hookups and releases for CH-53D (3 single or 3 dual for CH-53E).

EXT-506 1.0 A(CH-53) N NS

Goal. Demonstrate the crew chief duties, terminology and instructional techniques used during night external load operations.

Requirement

(1) Review the cargo hooks, cargo hook control panel, aircrewman's portable pendant control, cargo hook emergency release handle, static discharge precautions, and load rigging.

(2) Review hand and arm signals.

(3) Perform minimum of three hookups and releases for CH-53D (3 single or 3 dual for CH-53E).

STANX-507 1.0 A(CH-53) (N) (NS)

Goal. Crew Chief Instructor standardization check.

Requirement

(1) Evaluate the crew chief instructor for overall standardization of flight procedures and instructor techniques.

(2) STANX-508 can be flown in conjunction with any combat capable phase event.

(3) At the completion of the STANX-508 the Crew Chief may be designated a Crew Chief Instructor and is capable of instructing all combat capable events to include TERF and Night Systems.

551. REQUIREMENTS, QUALIFICATIONS, AND DESIGNATIONS

1. Purpose. Determine qualification for designation in specific flight skills and systems knowledge.

2. General

a. This is an annual flight requirement per OPNAVINST 3710.7 and the CH-53 NATOPS manual.

b. The evaluating crew chief shall be a CC NATOPS Evaluator.

3. Crew Requirement. CC/CC or CC/AO.

4. Flight Training. (1 Flight, 1.5 Hours).

ROD-604	1.5	E A(CH-53) (N)	E

Goal. Completion of the annual NATOPS evaluation.

Requirement. Evaluate proficiency in the knowledge and utilization of all flight skills and systems pertaining to the H-53.

552. GRADUATE LEVEL COURSES

1. There are five graduate level courses that certify crew chief instructors for tactical portions of the T&R syllabus. These courses are as follows:

a. Weapons and Tactics Crew Chief Instructor (WTCCI Sec MOS 6177)

b. Crew Chief Terrain Flight Instructor (CC TERFI)

c. Crew Chief Night Systems Instructor (CC CCNSI)

d. Crew Chief Defensive Measures Instructor (CC DMI)

e. Crew Chief Aerial Gunner Instructor (CC AGI)

2. The above courses and applicable training codes are listed in the current MAWTS-1 Course Catalog. There will be no refly factors for these instructor flights. T&R syllabus proficiency in stages is considered sufficient to maintain proficiency as an instructor. Weapons and Tactics Crew Chief Instructors (WTCCI's) are only certified at the weapons and Tactics Instructor course given at MAWTS-1.

3. There is one graduate level course to qualify Crew Chief Instructors for the Fleet Replacement Squadron. This program of instruction is contained in paragraph 550. Instructor Under Training.

560. ORDANCE REQUIREMENTS. Annual ordnance requirements are developed on a "per crew" basis per OPNAVNOTE 8010.

ORDNANCE	100 SERIES	200 SERIES	300 SERIES	400 SERIES	REFRESHER	IUT	ANNUAL*
.50 Cal	0	1,000	2,000	1,500	4,500	0	2,000
Chaff(1)	0	0	90	30	120	0	90
Flares(1)	0	0	90	90	180	0	90
Note (1) Chaff and Flare requirements are determined by the pilot's syllabus, Chapter 4							

* Annual Ordnance requirements maintain aircrew proficiency.

AIRCRAFT: CH-53 MOS: 6173 CREW POSITION: CREW CHIEF

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	O	C	R	S	E	REMARKS
COMBAT CAPABLE PHASE										
FAM	110	1.5	*	3.0						A
	111	1.5	*	3.0						A
	112	1.5	*	3.0						A
	113	1.5	*	3.0		X	X	X		A
	119	1.5	*	3.0						A (N)
	120	1.5	*	3.0						A N
	121	1.5	*	4.0		X	X			A N
	122	1.5	*	4.0		X	X			A N NS
INT	135	1.5	*	2.0	X	X	X	X		A
	136	1.5	*	2.0	X					A
	137	1.5	*	2.0	X					A (N) (NS)
FORM	152	1.5	*	2.0						A 2 A/C
	153	1.5	*	2.0						A 2 A/C N NS
CAL	161	1.5	*	2.0						A
	162	1.5	*	2.0	X	X	X	X		A
	163	1.5	*	2.0	X	X	X	X		A N NS
EXT	170	1.0	*	3.0	X	X	X	X		A
	171	1.0	*	3.0	X	X	X	X		A N (NS)
	172	1.5	*	3.0	X	X	X	X		A
	173	1.5	*	3.0	X	X	X	X		A N (NS)
TERF	180	1.5	*	4.0	X					A
CCX	191	1.5	*	2.0	X	X	X	X		A (N) (NS)
COMBAT READY PHASE										
INT	200	1.0	12	0.5	X	X	X			A (N) (NS)
	201	1.0	12	0.5	X	X	X			A (N) (NS)
FORM	210	1.5	12	0.5		X	X			A 2 A/C
	211	2.0	6	1.0		X	X			A 2 A/C N NS
CAL	220	1.5	12	0.5	X		X			A
	221	1.5	12	0.5		X	X	X		A 2 A/C
	222	1.5	6	1.0			X			A N NS
	223	2.0	6	1.0		X	X	X		A 2 A/C N NS
TERF	231	1.5	6	0.5			X			A
	232	1.5	6	0.5	X	X	X	X		A 2 A/C
	233	2.0	6	1.0			X			A N NS
	234	2.0	6	1.0	X	X	X	X		A 2 A/C N NS
EXT	240	1.5	12	0.5	X	X	X	X		A
	241	1.5	6	1.0	X	X	X	X		A N NS

Figure 5-1--MOS 6173 Refly Interval Combat Readiness Percentage

AIRCRAFT: CH-53 MOS: 6173 CREW POSITION: CREW CHIEF

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	O	C	R	S	E	REMARKS
FCLP	271	1.0	12	0.5		X	X			A
	272	1.0	12	0.5	X		X			A N
	273	1.0	12	1.0			X			A N NS
TAC	280	2.0	12	1.0		X	X			A 2 A/C
	281	2.0	6	1.0			X			A 2 A/C N NS
AG	290	1.5	12	0.5		X	X			A
	291	1.5	12	0.5		X	x			A
COMBAT QUALIFICATION PHASE										
CAL	320	1.5	6	1.5		X	X			A N NS
	321	2.0	6	2.0	X	X	X	X		A 2 A/C N NS
TERF	330	2.0	6	1.5		X	X			A N NS
	331	2.0	6	2.0		X	X	X		A 2 A/C N NS
EXT	341	1.5	12	1.0	X	X	X	X		A
	342	1.5	6	1.5	X	X	X	X		A N NS
	343	1.5	6	1.5	X	X	X	X		A N NS
DM	350	2.0	12	1.0	X	X	X			A 2 A/C
CQ	370	1.5	12	1.0	X	X	X			A
	371	1.5	12	1.0	X	X	X			A N
	372	1.5	12	1.0	X	X	X			A N NS
TAC	380	2.0	12	1.0			X			A 2 A/C
	381	2.0	12	2.0		X	X			A 2 A/C N NS
AG	390	1.0	12	1.0		X	X			A N NS
	391	1.0	12	1.0		X	X			A N NS
FULL-COMBAT QUALIFICATION PHASE										
				53E/53D						
HIE	400	1.5	12	0.5/0.5	X	X	X	X		A (N) (NS)
	401	1.5	12	0.5/0.5	X	X	X	X		A
	402	1.5	12	0.5/0.5	X	X	X	X		A (N) (NS)
INT	410	2.0	12	0.5/0.0	X	X	X	X		A (N) (NS) (53E ONLY)
DM	450	0.5	12	0.5/0.5		X	X			A 2V1 R/W
	451	0.5	12	0.5/0.5		X	X			A 2V1 F/W
NBC	460	1.0	12	0.5/0.5			X			A (N) (NS)
TAC	480	2.0	12	0.5/0.75			X			A 3+A/C(N) (NS)
	482	2.0	12	0.5/0.75	X	X	X	X		A 2+A/C(N) (NS)
MTG	490	1.5	12	0.5/0.5		X	X			A

Figure 5-1--MOS 6173 Refly Interval Combat Readiness Percentage (Cont)

AIRCRAFT: CH-53 MOS: 6173 CREW POSITION: CREW CHIEF

STAGE	TRNG	FLT CODE	HRS	REFLY INTERVAL	CRP	C	R	S	E	REMARKS
INSTRUCTOR AND SPECIAL FLIGHT PERFORMANCE REQUIREMENTS										
FORM		500	1.0	*	N/A					A 2 A/C
		501	1.0	*	N/A					A 2 A/C N NS
CAL		502	1.0	*	N/A					
		503	1.0	*	N/A					A N NS
TERF		504	1.0	*	N/A					A
EXT		505	1.0	*	N/A					A
		506	1.0	*	N/A					A N NS
STANX		507	1.0	*	N/A					A (N) (NS)
REQUIREMENTS, QUALIFICATIONS, AND DESIGNATIONS										
RQD		604	1.5	12	N/A				X	A (N) (NS)

Figure 5-1--MOS 6173 Refly Interval Combat Readiness Percentage (Cont)

AIRCRAFT: CH-53 MOS: 61XX CREW POSITION: AERIAL GUNNER/OBSERVER

STAGE	FLT TRNG CODE	HRS	REFLY INTERVAL	CRP	C	R	S	E	REMARKS
COMBAT CAPABLE PHASE									
FAM	110	1.5	*	5.0	X	X	X		A
	120	1.5	*	5.0					AN
	122	1.5	*	5.0	X	X			A N NS
FORM	152	1.5	*	5.0					A 2 A/C
	153	1.5	*	5.0					A 2 A/C N NS
CAL	161	1.5	*	5.0			X		A
	163	1.5	*	5.0	X	X	X		A N NS
EXT	170	1.0	*	4.5	X	X	X		A
	171	1.0	*	4.5	X		X		A N (NS)
	172	1.5	*	4.5	X	X	X		A
	173	1.5	*	4.5	X		X		A N (NS)
TERF	180	1.5	*	5.0					A
CCX	191	1.5	*	2.0	X	X	X		A (N) (NS)
COMBAT READY TRAINING									
FORM	210	1.5	12	0.5	X	X			A 2 A/C
	211	2.0	6	0.5	X	X			A 2 A/C N NS
CAL	221	1.5	12	1.0	X	X	X		A 2 A/C
	222	1.5	6	1.0		X			A N NS
	223	2.0	6	1.0	X	X	X		A 2 A/C N NS
TERF	231	1.5	6	1.0		X			A
	232	1.5	6	1.0	X	X	X		A 2 A/C
	233	2.0	6	1.0		X			A N NS
	234	2.0	6	1.0	X	X	X		A 2 A/C N NS
EXT	240	1.5	12	1.0	X	X	X		A
	241	1.5	6	1.0	X	X	X		A N NS
FCLP	271	1.0	12	0.5	X	X			A
	273	1.0	12	0.5		X			A N NS
TAC	280	2.0	12	1.0	X	X			A 2 A/C
	281	2.0	6	1.0		X			A 2 A/C N NS
AG	290	1.5	12	1.0	X	X			A
	291	1.5	12	1.0	X	X			A

Figure 5-2.--AG/O Refly Interval, Combat Readiness Percentage.

AIRCRAFT: CH-53 MOS: 61XX CREW POSITION: AERIAL GUNNER/OBSERVER

STAGE	TRNG	FLT CODE	HRS	REFLY INTERVAL	CRP	C	R	S	E	REMARKS
COMBAT QUALIFICATION PHASE										
CAL		320	1.5	6	1.5	X	X			A N NS
		321	2.0	6	2.0	X	X	X		A 2 A/C N NS
TERF		330	2.0	6	1.5	X	X			A N NS
		331	2.0	6	2.0	X	X	X		A 2 A/C N NS
EXT		341	1.5	12	1.0	X	X	X		A
		342	1.5	6	1.5	X	X	X		A N NS
		343	1.5	6	1.5	X	X	X		A N NS
DM		350	2.0	12	1.0	X	X			A 2 A/C
CQ		370	1.5	12	1.0	X	X			A
		372	1.5	12	1.0	X	X			A N NS
TAC		380	2.0	12	1.0		X			A 2 A/C
		381	2.0	12	2.0	X	X			A 2 A/C N NS
AG		390	1.0	12	1.5	X	X			A N NS
		391	1.0	12	1.5	X	X			A N NS
FULL-COMBAT QUALIFICATION PHASE										
HIE		400	1.5	12	0.4	X	X	X		A (N) (NS)
		401	1.5	12	0.3	X	X	X		A
		402	1.5	12	0.3	X	X	X		A (N) (NS)
DM		450	0.5	12	0.5	X	X			A 2V1 R/W
		451	0.5	12	0.5	X	X			A 2V1 F/W
NBC		460	1.0	12	0.5		X			A (N) (NS)
TAC		480	2.0	12	1.0		X			A 3+A/C(N) (NS)
		482	2.0	12	1.0	X	X	X		A 2+A/C(N) (NS)
MTG		490	1.5	12	0.5	X	X			A
REQUIREMENTS, QUALIFICATIONS, AND DESIGNATIONS										
RQD		604	1.5	12	N/A			X		A (N) (NS)

Figure 5-2.--AG/O Refly Interval, Combat Readiness Percentage (Cont)

CH-53 CREW CHIEF FLIGHT UPDATE CHAINING

STAGE	FLIGHT	FLIGHTS UPDATED
INT	200	
	201	
FORM	210	
	211	210
CAL	220	
	221	210,220
	222	220
	223	210,211,220,221,222
TERF	231	
	232	210,231
	233	231
	234	210,211,231,232,233
EXT	240	220
	241	220,222,240
FCLP	271	
	272	271
	273	271,272
TAC	280	210,220,221,231,232
	281	210,211,220,221,222,223,231,232,233,234,280,290
AG	290	
	291	290
CAL	320	220,222
	321	210,211,220,221,222,223,320
TERF	330	231,233
	331	210,211,231,232,233,234,330
EXT	341	220,231,240
	342	220,222,240,241,320,341
	343	220,222,231,233,240,241,320,330,341,342
DM	350	231,232
CQ	370	271
	371	271,272,370
	372	271,272,273,370,371
TAC	380	210,220,221,231,232,280,290,291
	381	210,211,220,222,223,231,232,233,234,280,281,290,291,320,321 330,331,380,390,391
AG	390	290,291
	391	290,291,390

Figure 5-3.--Crew Chief Flight Update Chaining.

CH-53 CREW CHIEF FLIGHT UPDATE CHAINING

STAGE	FLIGHT	FLIGHTS UPDATED
HIE	400	201
	401	201
	402	201
INT	410	200
DM	450	210,231,232
	451	210,231,232
NBC	460	
TAC	480	210,220,221,231,232,280,290,291,380
	482	210,220,221,231,232,280
MTG	490	290,291

Figure 5-3.--Crew Chief Flight Update Chaining (Cont)

CH-53 AERIAL GUNNER/OBSERVER FLIGHT UPDATE CHAINING

STAGE	FLIGHT	FLIGHTS UPDATED
FORM	210	
	211	210
CAL	221	210
	222	
	223	210,211,221,222
TERF	231	
	232	210,231
	233	231
	234	210,211,231,232,233
EXT	240	
	241	222,240
FCLP	271	
	272	271
TAC	280	210,221,231,232
	281	210,211,221,222,223,231,232,233,234,280
AG	290	
	291	290
CAL	320	222
	321	210,211,221,222,223,320
TERF	330	231
	331	210,211,231,232,233,234,330
EXT	341	231,240
	342	222,240,241,320,341
	343	222,231,233,240,241,320,330,341,342
DM	350	231,232
CQ	370	271
	372	271,273,370
TAC	380	210,221,231,232,280,290,291
	381	210,211,221,222,223,231,232,233,234,280,281,290,291,320,321 330,331,380,390,391
AG	390	290,291
	391	290,291,390
HIE	400	
	401	
	402	
DM	450	210,231,232
	451	210,231,232

Figure 5-4.--Aerial Gunner/Observer Flight Update Chaining.

CH-53 AERIAL GUNNER/OBSERVER FLIGHT UPDATE CHAINING

STAGE	FLIGHT	FLIGHTS UPDATED
NBC	460	
TAC	480	210,221,231,232,280,290,291,380
	482	210,221,231,232,280
MTG	490	290,291

Figure 5-4.--Aerial Gunner/Observer Flight Update Chaining (Cont)

CHAPTER 6 CANCELED BY MCO P3500.49

CHAPTER 7 CANCELED BY MCO P3500.49